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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Apr. 13, 1984. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,976,049, Re. S.N. 600,733, Filed Apr. 13, 1984, Cl. 126/263, STRUCTURE OF WARMER, Iwao Yamashita, et al., Owner of Record: *Ashi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: James E. Ar Strong, et al., Ex. Gp.: 345

4,235,799, Re. S.N. 442,513, Filed Feb. 28, 1983, Cl. 518/706, PRODUCTION OF METHANOL, Theodore O. Wentworth, et al., Owner of Record: *Inventor,* Attorney or Agent: Charles E. Baxley, Ex. Gp.: 126

4,327,742, Re. S.N. 605,679, Filed Apr. 30, 1984, Cl. 128/736, TEMPERATURE VARIATIONS OVER SELECTED REGIONS OF LIVING TISSUE, Phillip H. Myers, et al., Owner of Record: *E-Z Em, Inc., Westbury, N.Y.,* Attorney or Agent: Lloyd McAulay, Ex. Gp.: 336

4,414,890, Re. S.N. 604,867, Filed Apr. 30, 1984, Cl. 100/162B, PRESS ROLL WITH ADJUSTMENT FLEXION, Christian Schiel, et al., Owner of Record: *J. M. Voith GmbH, Fed. Rep. of Germany,* Attorney or Agent: Sidney G. Faber, et al., Ex. Gp.: 242

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,076,071, Reexam. No. 90/000,576, Requested: June 18, 1984, Cl. 165/2, METHOD FOR HEATING PLASTICS MATERIALS, Otto Rosenkranz, et al., Owner of Record: *Fried. Krupp Gesellschaft Mit Beschrankter, Haftung, Essen, Germany,* Attorney or Agent: Hiram P. Settle, Jr., Ex. Gp.: 346, Requester: Krupp Corpoplast, Angerburger Strobe 24, Germany

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Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,380,447, Robert M. Martin, ANKLE DEVICE FOR SUPPORTING AN INDIVIDUAL IN AN INVERTED POSITION; **3,716,231, same,** USER CONTROLLED EXERCISER FRAME; **4,232,662,** S. Morgan Barber, THERAPEUTIC DEVICE FOR A HUMAN BODY, **filed** Aug. 3, 1981, D.C. Nev. (Reno), Doc. CV-R-81-140-BRT, *Robert M. Martin* v. *S. Morgan Barber, et al.*

3,411,256, The Dow Chemical Co., ROOF CONSTRUCTION AND METHOD THEREOF; **3,763,614, same,** ROOF CONSTRUCTION, **filed** Jan. 24, 1977, D.C., M.D. Fla. (Tampa), Doc. 77-0052-Civ.T.H., *The Dow Chemical Co.* v. *The Celotex Corp.* Ordered dismissed without prejudice to its refiling if and when the Patent and Trademark Office proceedings have been completed. Dated Jan. 9, 1980.

3,624,123, Lewis and Friedman, T-ALKYL PERESTERS OF T-HYDROPEROXIDES; **3,726,847, same,** POLYMERIZATION METHOD EMPLOYING T-ALKYL PERESTERS OF T-HYDROPEROXIDES, **filed** Dec. 12, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 6631, *Akzona, Inc.* v. *Witco Chemical Corp.*

3,701,433, Pall Corp., FILTER FOR USE IN THE FILTRATION OF BLOOD; **3,765,536, same,** BLOOD FILTER CASCADE; **3,765,537, same,** DUAL BLOOD FILTER, **filed** Mar. 9, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 1151, *Bentley Laboratories, Inc.* v. *Pall Corp.*

3,706,980, Drexelbrook Controls, Inc., RF SYSTEM FOR MEASURING THE LEVEL OF MATERIALS, **filed** Nov. 24, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-5246, *Drexelbrook Controls, Inc.* v. *Berwind Corp.*

3,708,388, Air Products and Chemicals, Inc., PROCESS OF LAMINATING USING VINYL ACETATE-ETHYLENE COPOLYMER LATEX ADHESIVE COMPOSITION, **filed** Feb. 15, 1984, D.C.S.C. (Greenville), Doc. 84-295-3, *Air Products and Chemicals, Inc.* v. *Reichhold Chemicals, Inc.*

3,709,853, George L. Karapinka, POLYMERIZATION OF ETHYLENE USING SUPPORTED BIS-(CYCLOPENTADIENYL) CHROMIUM (II) CATALYSTS; **3,756,998, same,** POLYMERIZATION OF OLEFINS USING SUPPORTING II-ARENECHROMIUM TRICARBONYL CATALYSTS, **filed** Dec. 19,

1983, D.C., N.D.N.Y. (Utica), Doc. 83-CV-1682, *George L. Karapinka* v. *Union Carbide Corp.*

3,710,082, Sloane and Heizman, SYSTEM FOR DIGITALLY CONTROLLING A VIBRATION TESTING ENVIRONMENT OR APPARATUS, **filed** May 17, 1979, D.C., S.D. Calif. (San Diego), Doc. 79-0658-N, *Genrad, Inc.* v. *Spectral Dynamics Corp.* By stipulated dismissal and order, complaint and counterclaim shall be dismissed with prejudice. Filed Mar. 13, 1984.

3,713,380, Robert S. Bardin, COOKING UTENSIL, **filed** Jan. 22, 1981, D.C. Colo. (Denver), Doc. 81-K-86, *Northland Aluminum Products, Inc.* v. *Creative Cookware Co.*

3,716,065, Paul V. Finamore, HAIRPIECE, **filed** Nov. 21, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 8385, *Hairline Creations, Inc.* v. *Jerry Casper, Inc., et al.*

3,716,231. (See 3,380,447.)

3,720,760, Bennich, Johansson and Wide, METHOD FOR DETERMINING THE PRESENCE OF REAGIN-IMMUNOGLOBULINS (REAGIN-IG) DIRECTED AGAINST CERTAIN ALLERGENS, IN AQUEOUS SAMPLES, **filed** Oct. 17, 1980, D.C., W.D. Tex. (Austin), Doc. A-80-CA-383, *Pharmacia, Inc.* v. *Kallestad Laboratories, Inc.* **Same, filed** Dec. 30, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 6855IH, *Pharmacia, Inc.* v. *The Lopapa Institute, Inc.* Pat. No. 3,720,760 is valid. Defendant is permanently enjoined from further infringing Pat. No. 3,720,760. Filed June 16, 1983. **Same, filed** Oct. 8, 1982, D.C., Del. (Wilmington), Doc. 82-667, *Pharmacia, Inc.* v. *Ventrex Laboratories, Inc.* Notice of dismissal without prejudice dated June 29, 1983. **Same, filed** Mar. 21, 1984, D.C., S.D. Calif. (San Diego), Doc. 84-0699-T(CM), *Pharmacia, AB* v. *Hybritech, Inc.*

3,724,916, Crane Co., CONTROLLED WHEEL BRAKING SYSTEM; **3,729,234, same,** BRAKE CONTROL MODULATOR, **filed** June 6, 1977, D.C., N.D. Ohio (Cleveland), Doc. 77-207A, *Crane Co.* v. *The Goodyear Tire & Rubber Co.* Judgment entered in favor of defendants and against plaintiff on Sept. 28, 1983.

3,726,847. (See 3,624,123.)

3,729,051, Mannion and Mannion, PROCESS FLUID FLOW REGULATION SYSTEMS; **3,875,995, same,** PROCESS FLUID FLOW PRIMARY AND SECONDARY REGULATION SYSTEMS, **filed** June 3, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 3845, *Stallings & Co.* v. *Gerald F. Mannion, James Mannion and Mannion Mechanical Services.*

3,729,234. (See 3,724,916.)

3,729,680, Ramsey H. McDonald, RADIO PAGER WITH VOICE MESSAGE AND SUBSTITUTE PAGING NUMBERS, **filed** Feb. 20, 1981, D.C., S.D. Fla. (Ft. Lauderdale), Doc. 81-6096-CIV-JAG, *Ramsey H. McDonald* v. *Motorola, Inc.* Stipulated Dismissal of Plaintiff's complaint filed July 14, 1981.

3,732,954, Robert H. Heid, QUICK CHANGE AUTOMATIC TRANSMISSION BAND AND BRACKET ASSEMBLY; **3,747,713,** Thomas J. Victory, BRAKE BAND END CONNECTION AND METHOD OF MANUFACTURE; **3,858,691,** Thomas J. Victory, BRAKE BAND END CONNECTION; **3,869,785,** Thomas J. Victory, METHOD OF CONVERTING ONE TYPE OF BRAKE BAND TO ANOTHER TYPE; **3,926,359,** Thomas J. Victory, METHOD OF CONVERTING BRAKE BAND END CONNECTION, **filed** Aug. 27, 1980, D.C., N.D. Ala. (Birmingham), Doc. 80-G-1121-NW, *Rebiltors Automotive Co., Inc.* v. *Delta Automotive, Inc.* Pat. Nos. 3,732,954, 3,747,713, 3,858,691, 3,869,785 and 3,926,359 are valid. Defendant is hereby enjoined from infringing any or all of above-named patents. Consent Judgment filed May 7, 1981.

3,736,734, Raymond Pavel, ROW CROP HEADER ATTACHMENT, **filed** June 1, 1983, D.C. N. Dak. (Fargo), Doc. A2-83-86, *Raymond Pavel* v. *Marvin Landeis, et al.*

3,736,968, Sun Studs, Inc., METHOD AND APPARATUS FOR PROCESSING LOGS; **3,746,065, same,** PROCESS AND APPARATUS FOR VENEER CUTTING; **3,852,579, same,** METHOD AND APPARATUS FOR DETERMINING THE SURFACE CONFIGURATION OF ELONGATE OBJECTS, PARTICULARLY LOGS, **filed** Aug. 3, 1978, D.C. Ore. (Portland), Doc. 78-714-JU, *Sun Studs, Inc.* v. *Applied Theory Associates, Inc.*

3,740,331, The Permutit Co., Inc., METHOD FOR PRECIPITATION OF HEAVY METAL SULFIDES, **filed** Jan. 5, 1979, D.C.N.J. (Trenton), Doc. 79-45, *The Permutit Co., Inc.* v. *Hussong-Walker-Davis Co.* Order of dismissal without prejudice filed Dec. 18, 1979.

3,740,785, Heico, Inc., HYDRAULIC SEWER PIPELINE CLEANER, **filed** June 23, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 3241, *Heico, Inc.* v. *Sewer Equipment of America, et al.* Complaint and counterclaim dismissed with prejudice. Filed Aug. 31, 1981.

3,741,233, Raymond P. Smith, Jr., LEAK PREVENTION SYSTEM FOR AN OIL PIPELINE, **filed** June 18, 1981, D.C. Del. (Wilmington), Doc. 81-259, *Raymond P. Smith, Jr.* v. *Alyeska Pipeline Service Co., et al.* Action dismissed with prejudice per Order of Dismissal dated Nov. 29, 1983.

3,744,705, Stone Container Corp., CARTON CLOSURE RIGIDIFYING CONSTRUCTION, **filed** June 23, 1980, D.C., N.D. Ga. (Atlanta), Doc. C80-1059A, *Stone Container Corp.* v. *Owens-Ill., Inc.*

3,745,536, Burroughs Corp., HIGH SPEED SERIAL SCAN AND READ-OUT OF KEYBOARDS, **filed** Dec. 8, 1982, D.C., E.D. Wash. (Spokane), Doc. C-82-917, *Key Tronic Corp.* v. *Burroughs Corp.*

3,746,065. (See 3,736,968.)

3,747,713. (See 3,732,954.)

3,751,014, Graham Engineering Corp., APPARATUS FOR EXTRUDING SYNTHETIC PLASTIC RESINS AT LOW TEMPERATURES; **3,866,669,** Crompton & Knowles Corp., EXTRUDER AND TEMPERATURE CONTROL APPARATUS THEREFOR; **4,262,737,** Crompton & Knowles Corp., EXTRUDER TEMPERATURE CONTROLLER, **filed** May 10, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2972, *Eurotherm Corp.* v. *Crompton & Knowles Corp.*

3,756,625, Velo-Bind, Inc., METHOD AND APPARATUS FOR BINDING BOOKS; **4,369,013, same,** BOOKBINDING STRIPS, **filed** May 3, 1983, D.C., N.D. Calif. (San Jose), Doc. C-83-20002 WAI, *Velo-Bind, Inc.* v. *D & P Binding Supplies, et al.*

3,756,998. (See 3,709,853.)

3,757,087, Smiths Industries Ltd., HEATING ELEMENTS, **filed** June 12, 1978, D.C., N.D. Calif. (San Francisco), Doc. C78 1289 WAI, *Interdynamics, Inc. and Smiths Industries, Ltd.* v. *Products Intl. Co., Inc., et al.* Case dismissed without prejudice per order and Stipulation dated July 7, 1980. **Same, filed** Sept. 24, 1982, D.C. Conn. (Hartford), Doc. H-82-908, *Interdynamics, Inc. and Smiths Industries, Ltd.* v. *Rourke-Eno Paper Co., Inc.*

3,758,088, The Marley Co., HYPERBOLIC CROSS FLOW COOLING TOWER WITH BASINS AND FILL INTEGRATED INTO SHELL, **filed** Feb. 21, 1984, D.C. Del. (Wilmington), Doc. 84-95, *The Marley Co.* v. *Bac-Pritchard, Inc.*

3,758,935, AMP, Inc., APPARATUS FOR SECURING WIRES TO TERMINALS IN CONNECTORS; **3,845,535, same,** APPARATUS FOR CONNECTING CONDUCTORS TO CONTACT TERMINALS IN

AN ELECTRICAL CONNECTOR; **3,859,724, same,** METHOD AND APPARATUS FOR MANUFACTURING ELECTRICAL HARNESSES, **filed** Oct. 13, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 7185, *AMP, Inc.* v. *Panduit Corp.*

3,759,319, Westinghouse Electric Corp., METHOD FOR INCREASING EFFECTIVE SCAVENGING VENT STEAM WITHIN HEAT EXCHANGERS WHICH CONDENSE VAPOR INSIDE LONG TUBES; **4,166,497, same,** APPARATUS FOR INCREASING EFFECTIVE SCAVENGING VENT STEAM WITHIN A HEAT EXCHANGER WHICH CONDENSES VAPOR INSIDE LONG TUBES, **filed** Oct. 20, 1982, D.C. Del. (Wilmington), Doc. 82-681, *Westinghouse Electric Corp.* v. *Southwestern Engineering Co., Inc.*

3,761,994, SSK Enterprises, Inc., MAGNETIC TAPE HEAD CLEANING APPARATUS, **filed** Oct. 12, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 5278, *SSK Enterprises, Inc.* v. *Kraco Enterprises, Inc.* Causes of action in complaint and answer dismissed with prejudice per Judgment dated June 22, 1983.

3,763,614. (See 3,411,256.)

3,765,536. (See 3,701,433.)

3,765,537. (See 3,701,433.)

3,766,817, Prodyne Enterprises, FOOD SLICER, **filed** Aug. 2, 1983, D.C., W.D. Wash. (Seattle), Doc. C83-1077R, *Prodyne Enterprises, Inc.* v. *Nor-Pro, Inc., et al.* **Same, filed** Sept. 22, 1983, D.C., W.D. Wash. (Seattle), Doc. C83-1333C, *Prodyne Enterprises, Inc.* v. *Nordic Products, Inc., et al.*

3,771,023, Hollingsead-Pryor Enterprises, Inc., AVIONIC TRAY AND DETACHABLE METERING PLATE FOR CONTROLLING AIR FLOW TO AN ELECTRONIC INSTRUMENT WITH COOLING METERING PLATE, **filed** Sept. 29, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 5072, *Hollingsead-Intl., Inc.* v. *Barry Wright Corp.* Action dismissed with prejudice per Consent Judgment dated June 24, 1983.

3,772,419, Peter K. Schoening, METHOD FOR PRODUCING NON-METALLIC BEAM STRUCTURES, **filed** Oct. 25, 1983, D.C.N.J. (Trenton), Doc. 83-4066, *Imco Reinforced Plastics, Inc.* v. *Chemgrate Corp.*

3,773,383, Jostein Ekornes, READJUSTABLE CHAIR, **filed** Feb. 23, 1982, D.C. Mass. (Boston), Doc. 82-0486-MA, *J. E. Ekornes Fabrikker A/S* v. *Charlton Co., Inc.*

3,773,840, Bernard M. Regan, DIFLUOROMETHYL-2,2,3,3-TETRAFLUOROPROPYL ETHER; **3,773,841, same,** 1-CHLORO-2,2,3,3-TETRAFLUOROPROPYL DIFLUOROMETHYL ETHER, **filed** Apr. 28, 1980, D.C.N.J. (Newark), Doc. 80-1209, *Airco, Inc.* v. *Baxter Travenol Lab.* Order transferring action to Dist. of Del. filed July 13, 1981.

3,773,841. (See 3,773,840.)

3,775,552, AMP, Inc., MINIATURE COAXIAL CABLE ASSEMBLY, **filed** Nov. 12, 1982, D.C. Del. (Wilmington), Doc. 82-734, *AMP, Inc.* v. *W. L. Gore and Associates, Inc.*

3,776,581, The Youngstown Steel Door Co., SEALING CAM INTERLOCK; **3,923,327, same, filed** Dec. 19, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 9305, *The Youngstown Steel Door Co.* v. *UNR Industries, Inc.*

3,777,283, Carlos D. Elkins, TRANSPARENT SLIDE FOR THE EXAMINATION OF LIQUID SPECIMENS, **filed** June 3, 1983, D.C. Colo. (Denver), Doc. 83-JM-982, *ICL Scientific, Inc.* v. *Whale Scientific, Inc.*

3,780,502, National Foundry Equipment Co., Inc., COLLECTOR APPARATUS; **4,111,670,** NFE Intl., Ltd., TRUCK MOUNTED SEPARATOR APPARATUS, **filed** Oct. 19, 1983, D.C., N.D. Ala. (Birmingham), Doc. 83-AR-2506-S, *NFE Intl., Ltd.* v. *Guzzler Mfg., Inc.*

3,781,853, Tideland Signal Corp., NAVIGATIONAL LIGHT SYSTEM, **filed** Oct. 20, 1983, D.C., S.D. Tex. (Houston), Doc. H-83-6260, *Tideland Signal Corp.* v. *Automatic Power, Inc.*

3,781,931, Barbara Knickerbocker, INFLATABLE THERAPEUTIC DEVICE, **filed** Dec. 29, 1983, D.C.N.J. (Trenton), Doc. 83-5004, *Barbara Knickerbocker, et al.* v. *J. A. Preston Corp., Inc., et al.* Action dismissed without prejudice, dated Apr. 25, 1984.

3,782,708, Kuhlman Corp., SPRING ASSEMBLY AND METHODS AND MACHINES FOR THE MANUFACTURE THEREOF; **3,866,287, same,** METHODS FOR THE MANUFACTURE OF SPRING ASSEMBLIES, **filed** Apr. 13, 1983, D.C., E.D. Mich. (Detroit), Doc. 83CV1349DT, *Kuhlman Corp.* v. *Peterson American Corp.* Consent Judgment dated July 11, 1983.

3,784,047, Alfred Cooper, SAFETY CLOSURE CAP, **filed** Aug. 26, 1982, D.C., N.D. Calif. (San Francisco), Doc. 82-4571, *Alfred Cooper* v. *Ford Motor Co., et al.* Defendant's Motion for Summary Judgment granted and complaint dismissed. Dated Nov. 14, 1983.

3,792,522, Mercury Aircraft, Inc., FRAME-MAKING METHOD, **filed** Sept. 16, 1980, D.C., S.D. Ohio (Dayton), Doc. C-3-80-378, *Mercury Aircraft, Inc.* v. *Intl. Tool Co., Inc.* Final Judgment shall be binding upon Defendant, its subsidiary corporations and divisions thereof. Filed Sept. 23, 1983.

3,793,420, Fredricks and Smythe, AUTOMATIC INFINITELY ADJUSTABLE SIDE PLATE FOR TIRE CURING MACHINE, **filed** Feb. 18, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83-1029MRP (JRx), *Henry A. Church, IV* v. *National Equipment and Mold Co.*

3,798,684, Interroyal Corp., FLUIDIC SWITCHING SYSTEM, **filed** May 7, 1976, D.C., S.D.N.Y., Doc. 76-Civ-2077 JMC, *Interroyal Corp.* v. *Simmons Co.* Pat. No. 3,798,684 is hereby declared invalid and Complaint against Defendant for infringement thereof dismissed with prejudice. Final Judgment by Consent dated Mar. 18, 1980.

3,798,701, Irwin and Taube, CONCRETE FINISHING FLOAT, **filed** June 2, 1983, D.C., S.D. Tex. (Houston), Doc. H-83-3524, *Goldblatt Tool Co.* v. *H. Compton Co.*

3,799,758, Monsanto Co., N-PHOSPHONOMETHYL-GLYCINE PHYTOTOXICANT COMPOSITIONS, **filed** Feb. 11, 1983, D.C. Del. (Wilmington), Doc. 83-69, *Stauffer Chemical Co.* v. *Monsanto Co.*

3,806,312, McMaster and Nitschke, ROLLER HEARTH FURNACE; **3,994,711,** Harold A. McMaster, GLASS TEMPERING SYSTEM INCLUDING OSCILLATING ROLLER FURNACE, **filed** Apr. 26, 1984, D.C., S.D. Tex. (Houston), Doc. H-84-1969, *Glasstech, Inc.* v. *San Jacinto Glass Co. of Houston.* **Same, filed** Apr. 26, 1984, D.C., W.D. Pa. (Pittsburgh), Doc. 84-1022, *Glasstech, Inc.* v. *Three Rivers Aluminum Co., Inc.* **Same, filed** Apr. 27, 1984, D.C. Colo. (Denver), Doc. 84-K-889, *Glasstech, Inc.* v. *General Glass Corp.* **Same, filed** Apr. 30, 1984, D.C., W.D. Tex. (San Antonio), Doc. SA84CA883, *Glasstech, Inc.* v. *Wm. A. Swinney, Inc.*

3,823,468, Semi-Alloys, Inc., METHOD OF FABRICATING AN HERMETICALLY SEALED CONTAINER; **3,874,549, same,** HERMETIC SEALING COVER FOR A CONTAINER FOR A SEMICONDUCTOR DEVICE; **3,946,190, same,** METHOD OF FABRICATING A SEALING COVER FOR AN HERMETICALLY SEALED CONTAINER, **filed**

May 19, 1982, D.C., N.D.N.Y. (Utica), Doc. 82-CV-482, *Indium Corp. of America* v. *Semi-Alloys, Inc.*

3,834,392, KLI, Inc., LAPAROSCOPY SYSTEM; **3,911,923,** In Bae Yoon, OCCLUSION RING AND METHOD AND DEVICE FOR ITS APPLICATION; **3,989,049,** In Bae Yoon, METHOD OF APPLYING AN ELASTIC RING TO AN ANATOMICAL TUBULAR STRUCTURE; **4,085,742,** Takeshi Okada, ENDOSCOPE EQUIPPED WITH A FILM CASSETTE, **filed** May 25, 1979, D.C., N.D. Ill. (Chicago), Doc. 79 C 2150, *KLI, Inc., et al.* v. *Richard Wolf Medical Instrument Corp.*

3,837,896, Lindstrom, Jonsson and Ohlsson, SINTERED CEMENTED CARBIDE BODY COATED WITH TWO LAYERS, **filed** June 13, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 4076, *Santrade Ltd.* v. *Fansteel, Inc.* Cause dismissed without prejudice and without costs. Dated Feb. 23, 1984.

3,845,535. (See 3,758,935.)

3,852,579. (See 3,736,968.)

3,858,691. (See 3,732,954.)

3,859,724. (See 3,758,935.)

3,866,287. (See 3,782,708.)

3,866,669. (See 3,751,014.)

3,869,785. (See 3,732,954.)

3,874,549. (See 3,823,468.)

3,875,995. (See 3,729,051.)

3,893,123, B E Industries, COMBINATION GYRO AND PENDULUM WEIGHT STABILIZED PLATFORM ANTENNA SYSTEM; **4,020,491, same,** COMBINATION GYRO AND PENDULUM WEIGHT PASSIVE ANTENNA PLATFORM STABILIZATION SYSTEM, **filed** Aug. 10, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82 4197 WAI, *B E Industries, Inc.* v. *Sea Tel, Inc., et al.* Cause dismissed with prejudice. Order of Dismissal filed Apr. 11, 1984.

3,911,923. (See 3,834,392.)

3,913,337, Stanley Merjan, PILING, **filed** Apr. 30, 1984, D.C., S.D.N.Y., Doc. 84-Civ-3014 RLC, *Underpinning & Foundation Constructors, Inc.* v. *Pile Foundation, Inc., et al.*

3,923,327. (See 3,776,581.)

3,926,359. (See 3,732,954.)

3,926,489, Max G. Futch, APPARATUS FOR USE IN ASSEMBLING FOOD ON TRAYS, **filed** Aug. 2, 1983, D.C., S.D. Fla. (Miami), Doc. 83-1937-CIV-JE, *Max G. Futch* v. *Precision Metal Products, Inc.*

3,926,746, Minnesota Mining & Mfg. Co., ELECTRICAL INTERCONNECTION FOR METALLIZED CERAMIC ARRAYS, **filed** Dec. 15, 1981, D.C., S.D. Calif. (San Diego), Doc. 81-1281-T(M), *Kyocera Intl., Inc., et al.* v. *Minnesota Mining & Mfg. Co.* Notice of Dismissal with prejudice filed Sept. 9, 1982.

3,938,095, Pitney Bowes, Inc., COMPUTER RESPONSIVE POSTAGE METER; **3,978,457, same,** MICROCOMPUTERIZED ELECTRONIC POSTAGE METER SYSTEM; **4,246,643, same,** LOW COST POSTAGE APPLICATOR, **filed** Sept. 12, 1983, D.C., S.D.N.Y., Doc. 83-Civ-6707 WCC, *Pitney Bowes, Inc.* v. *Friden Mailing, Inc.* Order that above action be discontinued, without costs to either party, subject to reopening should settlement not be consummated within thirty days of the date hereof, dated Dec. 9, 1983.

3,940,204, Hughes Aircraft Co., OPTICAL DISPLAY SYSTEMS UTILIZING HOLOGRAPHIC LENSES, **filed** Aug. 10, 1983, D.C., N.D. Calif. (San Francisco), Doc. C-83-3796 RPA, *Hughes Aircraft Co.* v. *Kaiser Aerospace & Electronics Co.* **Same, filed** Aug. 11, 1983, D.C. Ore. (Portland), Doc. 83-1111, *Hughes Aircraft Co.* v. *Flight Dynamics, Inc.*

3,946,190. (See 3,823,468.)

3,950,638, Lam, Inc., HIGH INTENSITY INDIRECT LIGHTING FIXTURE, **filed** Dec. 23, 1976, D.C., Colo. (Denver), Doc. 76-W-1216, *Lam, Inc.* v. *Johns-Manville Corp., et al.* Judgment filed Dec. 3, 1982.

3,968,203, Carter-Wallace, Inc., AEROSOL ASTRINGENT SYSTEMS, **filed** June 10, 1981, U.S. Ct. of Appeals (1st Cir., Boston), Doc. 81-1403, *Carter-Wallace, Inc.* v. *The Gillette Co.* Judgment as to obviousness is vacated and cause remanded for further proceedings. The balance of judgment is affirmed. Dated Apr. 7, 1982. **Same, filed** June 19, 1981, U.S. Ct. of Appeals (1st Cir., Boston), Doc. 81-1426, *Carter-Wallace, Inc.* v. *The Gillette Co.* Judgment as to obviousness is vacated and cause remanded for further proceedings. The balance of Judgment is affirmed. Dated Apr. 7, 1982. **Same, filed** July 1, 1982, U.S. Ct. of Appeals (1st Cir., Boston), Doc. 82-1535, *Carter-Wallace, Inc.* v. *The Gillette Co.*

3,968,559, AB Volvo, METHOD AND ARRANGEMENT FOR ASSEMBLY OF COMPONENT PARTS, PREFERABLY FOR MOTOR VEHICLES, **filed** Sept. 22, 1983, D.C., N.D. Ohio (Cleveland), Doc. C83-3814, *AB Volvo* v. *Eaton-Kenway, Inc.* Complaint dismissed, with prejudice, per Order filed Mar. 7, 1984.

3,970,719, Phillips Petroleum Co., PREPARATION OF BLOCK COPOLYMERS; **4,039,632, same, filed** Mar. 8, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 2028, *Phillips Petroleum Co.* v. *Northern Petrochemical Co.*

3,972,352, Kobe, Inc., DISCHARGE ELEMENT FOR A LIQUID-GAS SEPARATOR UNIT, **filed** Mar. 12, 1984, D.C., N.D. Okla. (Tulsa), Doc. 84-C-227-E, *Kobe, Inc.* v. *TRW, Inc.*

3,977,405, Shozaburo Yanase, BREAST PUMP, **filed** May 1, 1984, D.C.N.J. (Newark), Doc. 84-1724 L, *Marshall Electronics, Inc.* v. *The Lumiscope Co., Inc.*

3,978,457. (See 3,938,095.)

3,983,569, Graphic Controls Corp., INSTRUMENT PEN WITH INTEGRAL PEN ARM ATTACHMENT MEANS; **4,337,471, same,** DISPOSABLE MARKERS ADAPTED FOR CONSTANT WIDTH AND CLOSE PROXIMITY TRACING, **filed** Feb. 24, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 1156, *Pentec* v. *Graphic Controls Corp.*

3,989,049. (See 3,834,392.)

3,991,770, Harry H. LeVeen, METHOD FOR TREATING BENIGN AND MALIGNANT TUMORS UTILIZING RADIO FREQUENCY, ELECTROMAGNETIC RADIATION, **filed** Feb. 2, 1981, D.C., S.D.N.Y., Doc. 81-Civ.-621 CBM, *BSD Medical Corp.* v. *Intl. Institute for Medical Sciences.*

3,994,711. (See 3,806,312.)

4,013,395, Alex F. Wormser, AERODYNAMIC FUEL COMBUSTOR, **filed** Jan. 4, 1983, D.C.N.J. (Trenton), Doc. 83-0057, *Victor Equipment Co.* v. *Acetylene Supply Co.*

4,018,260, Floyd M. Baslow, FABRIC WALL COVERINGS, **filed** Feb. 9, 1984, D.C. Colo. (Denver), Doc. 84-C-328, *Unique Concepts, Inc. and Floyd M. Baslow* v. *Architectural Resources & Systems, Inc., et al.*

4,020,491. (See 3,893,123.)

4,021,990, Hohmann Enterprises, Inc., VENEER ANCHOR AND DRY WALL CONSTRUCTION SYSTEM AND METHOD, **filed** Aug. 5, 1981, D.C., N.D. Ala. (Birmingham), Doc. CV81-G-1209-S, *Hohmann Enterprises, Inc.* v. *Dur-O-Wal, Inc., et al.* Order dated Oct. 26, 1983.

4,033,136, Robert C. Stewart, VAPOR ACTUATED POWER GENERATING DEVICE; **4,285,201, same,**

VAPOR POWERED ENGINE ASSEMBLY, **filed** Mar. 9, 1983, D.C. Nev. (Las Vegas), Doc. CV-LV-83-167-HEC, *Quantum Energy, Inc.* v. *Robert C. Stewart, et al.* Action dismissed without prejudice on Mar. 1, 1984.

4,034,918, Saturn Mfg., Inc., DRIVE ARRANGEMENT FOR ROTARY SHREDDING APPARATUS, **filed** Jan. 25, 1980, D.C., E.D. Mo. (St. Louis), Doc. 80-124C(4), *Saturn Mfg., Inc.* v. *Williams Patent Crusher & Pulverizer Co., et al.*

4,039,632. (See 3,970,719.)

4,059,405, Damon Corp., METHOD AND APPARATUS FOR ANALYSIS OF CONSTITUENT CARRIED IN FIBROUS MEDIUM, **filed** Nov. 2, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 7838, *American Hospital Supply Corp.* v. *Damon Corp.*

4,063,060, General Electric Co., METHODS OF MAKING TORSIONAL VIBRATION ISOLATING MOTOR MOUNTING SYSTEMS AND ARRANGEMENTS; **4,200,257, same,** TORSIONAL VIBRATION ISOLATING MOTOR MOUNTING SYSTEM, MOUNTING ARRANGEMENTS AND ASSEMBLIES INCLUDING THE SAME, **filed** June 1, 1983, D.C. Kans. (Wichita), Doc. 83-1548, *General Electric Co.* v. *Emerson Electric Co.*

4,085,742. (See 3,834,392.)

4,096,577, Ferber and Pavelle, THIN FLEXIBLE ELECTRONIC CALCULATOR, **filed** May 3, 1984, D.C., S.D.N.Y., Doc. 84-Civ-3105, *Leon A. Ferber and Richard Pavelle* v. *Sharp Electronics Corp.*

4,105,017, Electro-Biology, Inc., MODIFICATION OF THE GROWTH REPAIR AND MAINTENANCE BEHAVIOR OF LIVING TISSUE AND CELLS BY SPECIFIC AND SELECTIVE CHANGE IN ELECTRICAL ENVIRONMENT, **filed** Apr. 25, 1984, D.C., N.D. Tex. (Dallas), Doc. CA3-84-0630-C, *Electro-Biology, Inc.* v. *American Medical Electronics, Inc., et al.* **Same, filed** Apr. 30, 1984, D.C., N.D. Ga. (Atlanta), Doc. C84-862A, *Electro-Biology, Inc.* v. *Medical Innovators, Inc.*

4,109,445, Michael H. Shulman, OVERHEAD LOAD-WRAPPING APPARATUS, **filed** Apr. 26, 1984, D.C., S.D. Fla. (Miami), Doc. 84-6402-CIV-JE, *Infra Pak, Inc.* v. *Mima, Inc.*

4,111,670. (See 3,780,502.)

4,166,497. (See 3,759,319.)

4,175,923, Wm. G. Friend, METHOD AND APPARATUS FOR OCCULT BLOOD TESTING IN THE HOME, **filed** Nov. 28, 1983, D.C.N.J. (Newark), Doc. 83-4536D, *Warner-Lambert Co.* v. *C. B. Fleet Co., Inc.* Order transferring action to W.D. Va. filed Apr. 30, 1984. **Same, filed** May 7, 1984, D.C., W.D. Va. (Lynchburg), Doc. 84-0076-L, *Warner-Lambert Co.* v. *C. B. Fleet Co., Inc.*

4,200,257. (See 4,063,060.)

4,204,538, Imed Corp., CASSETTE FOR INTRAVENOUS CONTROLLER; **4,207,871, same,** SYSTEM FOR CONTROLLING THE FLOW OF INTRAVENOUS FLUIDS TO A PATIENT, **filed** Apr. 10, 1984, D.C., N.D. Tex. (Dallas), Doc. CA3-84-0551-F, *Imed Corp.* v. *Quest Medical, Inc.*

4,207,871. (See 4,204,538.)

4,218,625, Beckwith Electric Co., Inc., SYNCHRONIZING CHECK RELAY, **filed** Apr. 3, 1984, D.C., S.D. Ill. (E. St. Louis), Doc. 84-3082, *Beckwith Electric Co., Inc.* v. *Basler Electric Co., et al.*

4,228,269, Loshack and Shen, CONTACT LENSES OF HIGH GAS PERMEABILITY, **filed** Nov. 30, 1983, D.C. Del. (Wilmington), Doc. 83-829, *Schering Corp.* v. *Frigitronics, Inc., et al.*

4,232,662. (See 3,380,447.)

4,235,023, Willie H. Best, HIGH HEAT TRANSFER OVEN, **filed** Nov. 29, 1983, D.C., W.D.N.C. (Statesville), Doc. ST-C-83-304, *Therman Engineering Corp. and Willie H. Best* v. *Clear Air Systems, Inc., et al.*

4,238,907, Charles A. Swan, SHALLOW DOUBLE HUNG WINDOW; **4,420,907, same, filed** Apr. 24, 1984, D.C., M.D. Fla. (Tampa), Doc. 84-577-Civ.T.17, *Windows, Inc.* v. *Prime Marketing Group, Inc.*

4,246,643. (See 3,938,095.)

4,262,737. (See 3,751,014.)

4,280,497, Warner and Nelson, CONTAINER FOR PLATELET STORAGE, **filed** Nov. 1, 1983, D.C. Del. (Wilmington), Doc. 83-768, *Miles Laboratories, Inc.* v. *Baxter Travenol Labs., Inc., et al.*

4,282,175, Perfection Corp., STAB-TYPE COUPLING AND METHOD, **filed** Nov. 7, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 8286 CHH (Gx), *R. W. Lyall & Co., Inc.* v. *Perfection Corp.*

4,285,201. (See 4,033,136.)

4,318,053, Hartley D. Peavey, AMPLIFIER SYSTEM WITH AUTOMATIC DISTORTION CONTROL, **filed** May 1, 1984, D.C., N.D. Calif. (San Jose), Doc. C 84 20285, *Peavey Electronics Corp.* v. *Dean Markley Strings, Inc.*

4,335,643, Uzi Gal, SEMI-AUTOMATIC FIREARMS, **filed** May 5, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-2162, *Uzi Gal* v. *Action Mfg. Co., et al.*

4,337,471. (See 3,983,569.)

4,343,408, General Kap (P.R.) Corp., TAMPER-EVIDENT PLASTIC CLOSURE, **filed** Apr. 27, 1984, D.C., N.D. Ohio (Toledo), Doc. C 84-7390, *Advanced Plastics, Inc., et al.* v. *General Kap (P.R.) Corp.*

4,347,553, John R. Saron, FLEXIBLE LIGHT WITH PROTECTIVE CAP, **filed** Nov. 9, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 8030, *Key Medical, Inc.* v. *Lee's Enterprises, Inc., et al.* Dismissed by agreement of parties. Dated Apr. 30, 1984.

4,353,329, Osborne Industries, Inc., ROTARY SELF-FEEDER, **filed** Oct. 17, 1983, D.C., M.D. Pa. (Scranton), Doc. CV-83-1494, *Osborne Industries, Inc.* v. *Farmer Boy AG, Inc.* Plaintiff is the owner of Pat. No. 4,353,329 which is good and valid in law. Defendant shall not further infringe Plaintiff's patent. Permanent Injunction filed Apr. 27, 1984.

4,365,802, Arthur H. Ehrat, DEFORMATION-PREVENTING SWINGABLE MOUNT FOR BASKETBALL GOALS; **4,433,839,** John Simonseth, BASKETBALL RIM ASSEMBLY, **filed** Mar. 29, 1984, D.C., W.D. Wash. (Seattle), Doc. C84-391C, *Basketball Products Intl., Inc. and Arthur H. Ehrat* v. *Porter Equipment Co., et al.* **Same, filed** Mar. 29, 1984, D.C., W.D. Wash. (Seattle), Doc. C84-392M, *Basketball Products Intl., Inc. and Arthur H. Ehrat* v. *Toss Back, Inc., et al.* **Same, filed** Apr. 19, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 3324, *Porter Equipment Co.* v. *Basketball Products Intl., Inc. and Arthur H. Ehrat.*

4,365,802, Arthur H. Ehrat, DEFORMATION-PREVENTING SWINGABLE MOUNT FOR BASKETBALL GOALS, **filed** Jan. 18, 1984, D.C., W.D. Wash. (Seattle), Doc. C84-70R, *Basketball Products Intl., Inc. and Arthur H. Ehrat* v. *Mount Vernon School District.* **Same, filed** Mar. 28, 1984, D.C., E.D. Mo. (St. Louis), Doc. 84-0697C(2), *Gared Co.* v. *Basketball Products Intl., Inc. and Arthur H. Ehrat.*

4,369,013. (See 3,756,625.)

4,373,058, Lowell C. Horton, POLYMER CONCRETE COMPRISING FURFURYL ALCOHOL RESIN, **filed** May 16, 1983, D.C., S.D. Tex. (Houston), Doc. H-83-3117, *The Horton Co.* v. *I. W. Industries, Inc.*

Same, filed May 24, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-2465, *The Horton Co.* v. *Pennwalt Corp.* **Same, filed** May 10, 1983, D.C., N.D. Fla. (Pensacola), Doc. PCA 83-4105, *The Horton Co.* v. *United Applicators, Inc.* Dismissed for want of prosecution. Dated Sept. 8, 1983. **Same, filed** Oct. 18, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 7294, *The Horton Co.* v. *The Quaker Oats Co.* **Same, filed** Nov. 22, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-5674, *Pennwalt Corp.* v. *The Horton Co., et al.* **Same, filed** June 6, 1983, D.C. Del. (Wilmington), Doc. 83-344, *The Horton Co.* v. *Atlas Minerals & Chemicals, Inc.* Dismissed for want of prosecution on Jan. 5, 1984.

4,374,211, John P. Gallagher, ARAMID CONTAINER FRICTION MATERIALS, **filed** Apr. 18, 1984, D.C. Del. (Wilmington), Doc. 84-218, *Friction Div. Products, Inc.* v. *E. I. Dupont de Nemours & Co., Inc.*

4,375,442, Yoshino Kogyosho Co., Ltd., METHOD FOR PRODUCING POLYESTER CONTAINER; **4,379,099, same, filed** Apr. 26, 1984, D.C., N.D. Ga. (Atlanta), Doc. C84-820A, *Yoshino Kogyosho Co. Ltd.* v. *Sewell Plastics, Inc.*

4,379,099. (See 4,375,442.)

4,384,414, Robert J. Gamm, ATHLETIC SHOE POCKET, **filed** June 17, 1983, D.C. Minn. (Minneapolis), Doc. 4-83 Civil 527, *Envoys U.S.A., Inc.* v. *Midwest Stores, Inc.* **Same, filed** June 23, 1983, D.C., E.D. Mo. (St. Louis), Doc. 83-1495C(2), *Envoys U.S.A., Inc.* v. *Edison Brothers Stores, Inc.* **Same, filed** Aug. 18, 1983, D.C., S.D.N.Y., Doc. 83-Civ-6165 MP, *Kangaroos U.S.A., Inc.* v. *Kukje America Corp., et al.*

4,387,440, Michael D. Eaton, MODEM CONTROL DEVICE CODE MULTIPLEXING, **filed** Feb. 16, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 1431, *U.S. Robotics, Inc.* v. *Business Computer Corp. and Michael D. Eaton.*

4,405,531, Monsanto Co., SALTS OF N-PHOSPHONOMETHYLGLYCINE, **filed** Sept. 20, 1983, D.C. Del. (Wilmington), Doc. 83-611, *Stauffer Chemical Co.* v. *Monsanto Co.*

4,412,708, Pace Industries, Inc., CABINET DOOR HINGE CONSTRUCTION, **filed** May 7, 1984, D.C., S.D. Ind. (Evansville), Doc. EV 84-142-C, *Pace Industries, Inc.* v. *Aristokraft Div.*

4,414,594, Atasi Corp., LINEAR ACTUATOR FOR A MEMORY STORAGE APPARATUS, **filed** Nov. 16, 1983, D.C., N.D. Calif. (San Jose), Doc. 83 20364 WAI, *Atasi Corp.* v. *Priam Corp.*

4,420,907. (See 4,238,907.)

4,423,415, Light Signatures, Inc., NON-COUNTERFEITABLE DOCUMENT SYSTEM, **filed** Dec. 28, 1983, D.C., N.D. Tex. (Dallas), Doc. CA3-83-2264 R, *Light Signatures, Inc.* v. *Copy-Tex Sicherheitssysteme Intl. Vertriebsgesellschaft Mbh.* **Same, filed** Jan. 20, 1984, D.C., N.D Tex. (Dallas), Doc. CA3-84-0091-G, *Light Signatures, Inc.* v. *CSI Copytex-Sicherheitssysteme Intl. Vertriebs, et al.*

4,433,839. (See 4,365,802.)

4,438,693, R. Jennings Mfg. Co., Inc. SILK SCREEN PRINTING ONTO THE FRONT PANEL OF A CAP, **filed** May 4, 1984, D.C., M.D. Fla. (Tampa), Doc. 84-636 Civ T-13, *R. Jennings Mfg. Co., Inc.* v. *Miracle Mfg. Co. of Fla., Inc.*

4,439,202, Virginville Patents, Inc., EMBROIDERED TRANSFER AND METHOD OF MAKING SAME, **filed** Apr. 30, 1984, D.C., E.D. Pa. (Philadelphia), Doc. 84-2054, *Virginville Patents, Inc.* v. *Bryntex, Ltd., et al.*

4,448,224, Frank M. Crain, TUG BOAT COVER ROLLING APPARATUS, **filed** Feb. 15, 1984, D.C., W.D. Pa. (Pittsburgh), Doc. 84-367, *Frank M. Crain, trading as Frank M. Crain Co.* v. *Pa. Power Co., et al.*

PATENT NOTICES

Certificates of Correction for the Week of July 17, 1984

D. 267,004	4,373,592	4,407,204	4,425,320
D. 267,912	4,373,605	4,408,083	4,425,675
D. 270,420	4,375,452	4,408,329	4,426,086
3,720,920	4,375,750	4,408,677	4,426,295
3,821,906	4,376,221	4,411,018	4,426,301
3,892,185	4,379,336	4,411,731	4,426,356
3,999,610	4,382,837	4,411,959	4,427,427
4,005,102	4,383,897	4,413,536	4,427,902
4,032,779	4,383,947	4,414,123	4,428,846
4,177,222	4,384,982	4,414,673	4,430,179
4,224,431	4,386,068	4,414,900	4,430,587
4,239,418	4,387,024	4,415,628	4,430,666
4,239,578	4,390,023	4,415,813	4,431,667
4,263,602	4,392,366	4,416,650	4,431,926
4,271,119	4,394,109	4,417,088	4,431,952
4,278,320	4,395,353	4,417,136	4,432,139
4,294,948	4,396,057	4,418,202	4,432,143
4,296,633	4,397,986	4,418,937	4,432,763
4,298,945	4,400,366	4,419,218	4,433,352
4,308,093	4,400,833	4,419,328	4,433,439
4,323,538	4,401,108	4,419,581	4,433,467
4,327,432	4,401,122	4,420,261	4,434,092
4,329,444	4,402,485	4,420,289	4,434,105
4,336,413	4,403,061	4,420,292	4,435,073
4,345,262	4,403,984	4,420,325	4,435,269
4,348,849	4,404,199	4,420,514	4,436,474
4,353,638	4,404,234	4,420,667	4,438,296
4,357,689	4,404,782	4,421,114	4,438,928
4,358,985	4,405,199	4,422,005	4,438,930
4,361,649	4,405,251	4,422,006	4,443,040
4,361,960	4,405,497	4,422,590	4,443,556
4,365,065	4,406,489	4,423,230	4,443,716
4,366,646	4,406,503	4,424,120	4,446,868
4,368,490	4,406,519	4,424,270	4,449,160
4,369,289	4,406,627	4,424,570	
4,373,133	4,406,822	4,424,631	

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Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6670
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
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RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 9, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-21-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	9-30-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	6-30-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	8-25-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-24-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	10-29-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-27-81
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-07-82
DESIGN, GROUP 290—K. L. CAGE, Director	2-26-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	8-03-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-10-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	6-08-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	5-14-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-26-81

Expiration of patents: The patents within the range of numbers indicated below expire during June 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,323,134 to 3,328,805, inclusive

Plant Patents ..... Numbers 2,766 to 2,749 inclusive

REEXAMINATIONS

JULY 17, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,752,159 (216th)
RESECTOSCOPE CUTTING ELECTRODE
Reinhold D. Wappler, New Canaan, Conn., assignor to American Hospital Supply Corp., Anston, Ill.
Reexamination Request No. 90/000,399, Jun. 7, 1983.
Reexamination Certificate for Patent No. 3,752,159, issued Aug. 14, 1973, Ser. No. 139,541, May 3, 1971.
Int. Cl.[3] A61B *17/32*
U.S. Cl. 128—303.15

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–10** are cancelled.

[1. In combination with a resectoscope which includes a tubular sheath and an optical telescope having a tubular stem within the sheath, an eyepiece adjacent the proximal end of the sheath and an objective lens adjacent the distal end of the sheath, a cutting electrode comprising

a. a tubular body carried by and reciprocable along said tubular stem;

b. an electrode wire including

1. a first part extending through and electrically insulated from the inner surface of said tubular body,

2. a generally loop-shaped second part extending beyond the distal end of said tubular body and comprised of

i. a pair of electrically insulated arms extending in spaced relation along opposite sides of the telescope stem and

ii. an uninsulated cutting element constituting a continuation of each arm and positioned in the field of vision of the telescope; and

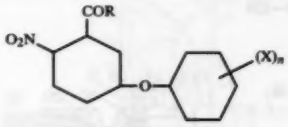
c. means secured to the distal portion of said tubular body and movable therewith relative to the telescope stem, said means engaging and supporting each of said spaced arms and maintaining the same in spaced relation to opposite sides of the telescope stem.]

B1 3,941,830 (217th)
SUBSTITUTED PHENOXYBENZOIC ACIDS AND ESTERS THEREOF
Robert J. Theissen, Westfield, N.J., assignor to Rhone-Poulenc Agrochemie, Lyon, France
Continuation of Ser. No. 114,712, Feb. 11, 1971, Pat. No. 3,784,635, which is a continuation-in-part of Ser. No. 819,412, Apr. 25, 1969, Pat. No. 3,652,645.
Reexamination Request No. 90/000,278, Oct. 28, 1982.
Reexamination Certificate for Patent No. 3,941,830, issued Mar. 2, 1976, Ser. No. 398,610, Sep. 19, 1973.
Int. Cl.[3] C07C *69/78*
U.S. Cl. 560—21

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

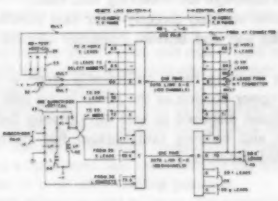
Claims **1–5** are cancelled.

[1. A compound having the formula:



wherein X is halogen, C_1–C_4 alkyl, or NO_2 and at least one X is halogen and another is C_1–C_4 alkyl or NO_2, R is hydroxy or alkoxy of 1 to 5 carbon atoms; and n is 2 to 5.]

B1 4,038,498 (218th)
CENTRAL OFFICE SWITCHING SYSTEM WITH REMOTE LINE SWITCH
Frank S. Boxall, 380 Eleanor Dr., Woodside, Calif. 94062
Reexamination Request No. 90/000,384, May 26, 1983.
Reexamination Certificate for Patent No. 4,038,498, issued Jul. 26, 1977, Ser. No. 676,542, Apr. 12, 1976.
Int. Cl.[3] H04Q *3/60*
U.S. Cl. 179—18 FC



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

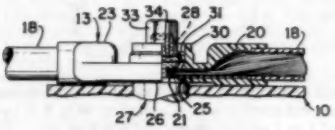
The patentability of claims **7** and **8** is confirmed.

Claims **1–6** are cancelled.

7. A central office switching system with remote line switch as in claim **5** wherein the inputs to the scanning terminal of said first data link comprises ground or not from the contacts of remote subscriber line relays, ground or not from vertical S leads, and positive battery or not from horizontal S leads at the remote switch portion location, wherein the outputs from the corresponding distributing terminal at the central office location comprise ground or not to f and g leads, ground or not to S′ leads, and positive battery or not to horizontal S leads, wherein the inputs to the scanning terminal of said second data link comprise ground or not from horizontal S leads, negative battery or not from SM′ leads, positive battery or not from S′ leads, and ground or not from S′ leads at the central office location, and wherein the outputs from the corresponding distributing terminal at the remote switch portion location comprise ground or not to horizontal S leads, negative battery

or not to select magnets, positive battery or not to vertical S leads, and ground or not to line-hold magnets.

B1 4,049,335 (219th)
SEALED BATTERY THREADED STUD TERMINATION
Victor J. Julian, 2400 Bellvue, Westchester, Ill. 60153, and Kenneth A. Julian, 769 Oakwood Dr., Westmont, Ill. 60559
Reexamination Request No. 90/000,111, Nov. 13, 1981.
Reexamination Certificate for Patent No. 4,049,335, issued Sep. 20, 1977, Ser. No. 727,405, Jan. 10, 1977.
Int. Cl.³ H01R *11/26*
U.S. Cl. 339—224



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–10** are cancelled.

[1. A termination for connecting an electric cable to a shouldered terminal stud of a battery, comprising

a tubular conductive member surrounding a portion of said cable,

said tubular member having top and bottom flat surfaces,

said surfaces and said cable being provided with aligned holes therethrough for receiving said stud,

a plastic cover molded directly over said tubular member and having top and bottom openings aligned with said holes,

said bottom opening being sufficiently large to receive at least the upper portion of the shoulder on said stud, and

fastening means disposed in said top opening for engaging said stud and holding said bottom flat surface tightly against said shoulder.**]**

B1 4,128,357 (220th)
SLAB-ELEMENTS FOR COVERING THE GROUND
Günter Barth, Grötzingen and Fritz Von Langsdorff, Rastatt, both of Fed. Rep. of Germany, assignors to F. Von Langsdorff Bauverfahren GmbH, Rastatt, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 672,727, Apr. 1, 1976, abandoned.
Reexamination Request Nos. 90/000,301, Dec. 2, 1982 and 90/000,313, Jan. 12, 1983.
Reexamination Certificate for Patent No. 4,128,357, issued Dec. 5, 1978, Ser. No. 882,250, Feb. 28, 1978.
Claims priority, application Belgium, Mar. 29, 1976, 165663; Fed. Rep. of Germany, Mar. 25, 1977, 2713354
Int. Cl.³ E01C *5/00*
U.S. Cl. 404—41

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **9**, **13**, and **20–28** is confirmed.

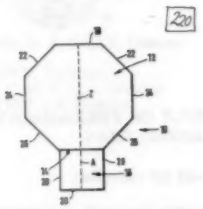
Claims **1–8**, **10–12** and **14–19** are cancelled.

New claims **29–33** are added and determined to be patentable.

29. Paving stones for covering ground areas by being laid onto them each stone beside others, each said stone being a unitary shaped piece of concrete substantially longer than it is wide and mirror symmetrical relative to its central longitudinal axis,

each said stone consisting of a centrally symmetrical head portion centered on said axis and a centrally symmetrical stem portion centered thereon and of less width than said head portion,

said head portion being delimited by seven rectilinear side faces and a rectilinear notional plane throughout which said head portion is integral with said stem portion, one of said side faces being an end face of the stone, two being inclined outward from said end face at an angle of 45° to said axis, two being lateral faces extending parallel to said axis from said inclined faces, and two being inclined inward from said lateral faces at an angle of 45° to said axis with their respective inner ends delimiting said notional plane,



said stem portion being delimited by said notional plane and three rectilinear side faces of which two are lateral faces extending parallel to said axis from said inner ends and the third is the other end face of said piece,

said lateral faces, said end faces and said notional plane all being of equal length,

said inclined faces all being of equal length but substantially shorter than said end faces and said lateral faces,

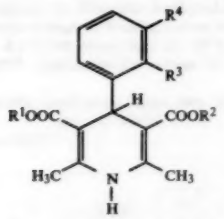
each said stone having a rectilinear dummy jointing gap formed in and across its upper side between the said inner ends, each said stone being layable beside others of said stones in any of several different patterns of load-resistant interengagement, including a herringbone bond pattern, in all of which the stones give the surface appearance of octagonal stones laid beside square stones, said dummy jointing gap in each stone constituting a predetermined rupture zone along which the stone if overloaded in a pavement can break without noticeable change of said surface appearance.

B1 4,264,611 (221st)
2,6-DIMETHYL-4-2,3-DISUBSTITUTED PHENYL-1,4-DIHYDRO-PYRIDINE-3,5-DICARBOXYLIC ACID-3,5-ASYMMETRIC DIESTERS HAVING HYPOTENSIVE PROPERTIES, AS WELL AS METHOD FOR TREATING HYPERTENSIVE CONDITIONS AND PHARMACEUTICAL PREPARATIONS CONTAINING SAME
Peder B. Berntsson, Mölndal; Stig A. I. Carlsson, Mölnlycke; Jan Ö Gaarder, Göteborg, and Bengt R. Ljung, all of Sweden, assignors to Aktiebolaget Hassle, Mölndal, Sweden
Reexamination Request No. 90/000,413, Jun. 30, 1983.
Reexamination Certificate for Patent No. 4,264,611, issued Apr. 28, 1981, Ser. No. 50,083, Jun. 19, 1979.
Claims priority, application Sweden, Jun. 30, 1978, 7807404
Int. Cl.³ C07D *213/55;* **A61K** *31/455*
U.S. Cl. 424—266

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-30 is confirmed.

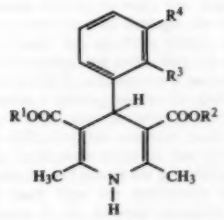
1. A compound of the formula I



(I)

wherein R^1 is selected from the group consisting of $-CH_3$, $-C_2H_5$, $-CH_2CH_2OCH_3$, and $-CH_2CH_2OC_2H_5$, R^2 is selected from the group consisting of $-CH_2CH_3$, $-CH(CH_3)_2$, $-C(CH_3)_3$, $-CH(CH_3)CH_2OCH_3$, $-C(CH_3)_2CH_2OCH_3$, and $-CH_2C(CH_3)=CH_2$, whereby R^1 and R^2 are not the same, R^3 is chloro and R^4 is selected from the group consisting of chloro, and methyl.

4. A method for treating arterial hypertension in a mammal suffering therefrom, comprising administering to said mammal an amount effective to relax the vascular smooth muscle of said mammal of a compound of formula I



(I)

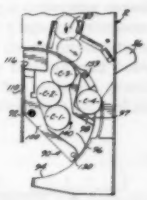
wherein R^1 is selected from the group consisting of $-CH_3$, $-C_2H_5$, $-CH_2CH_2OCH_3$, and $-CH_2CH_2OCH_2H_5$, R^2 is selected from the group consisting of $-CH_2CH_3$, $-CH(CH_3)_2$, $-C(CH_3)_3$, $-CH(CH_3)CH_2OCH_3$, $-C(CH_3)_2CH_2OCH_3$, and $-CH_2C(CH_3)=CH_2$, whereby R^1 and R^2 are not the same, R^3 is chloro, and R^4 is selected from the group consisting of chloro, and methyl.

B1 4,375,255 (222nd)

COIN HANDLING APPARATUS FOR A VENDING MACHINE

Glenn M. Roberts, 4169 Avenida Madrid, Cypress, Calif. 90630

Reexamination Request No. 90/000,477, Dec. 6, 1983.
Reexamination Certificate for Patent No. 4,375,255, issued Mar. 1, 1983, Ser. No. 251,149, Apr. 6, 1981.
Int. Cl.³ G07F 5/04
U.S. Cl. 194—1 G



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-8 and 10-13 is confirmed.

Claim 9 is determined to be patentable as amended:

1. In a coin-operated vending machine, coin-handling apparatus adjustable to receive single or multiple coins, said coin handling apparatus comprising:

a support attached to said vending machine;

a coin feed chute on said support;

a plate member rotatably carried by said support in communication with said coin feed chute;

a coin discharge chute on said support below said coin feed chute and in communication with said plate member;

a coin passage extending through said plate member to receive one or more coins, one end of said passage facing said coin feed chute when said plate member is in an initial coin loading position;

a coin receiving pocket formed in said plate member intermediately of said coin passage and isolated therefrom, said pocket having a radially outwardly facing opening to receive a coin from said coin feed chute when said plate member is in its coin-loading position;

adjustment means on said support that extend into said coin passage at selective positions so as to limit the number of coins which may be received within said coin passage when said plate member is in its coin-loading position; and

means attached to said plate member for rotating said plate member from its coin loading position to a coin unloading position wherein the other end of said coin passage and the opening of said pocket are exposed to said coin discharge chute, and with said rotation moving any coins disposed within said coin passage out of contact with said adjustment means whereby any coins disposed in said coin chute and the coin disposed within said pocket automatically fall into said coin discharge chute.

REISSUES

JULY 17, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,630
ELECTRON BEAM EXPOSURE SYSTEM

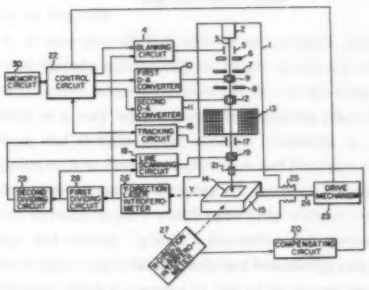
Eiichi Goto, Fujisawa; Takashi Souma, Kiyose; Masanori Idesawa, Wako, and Kazumitsu Tanaka, Akishima, all of Japan, assignors to Rikagaku Kenkyusho, Saitamaken and Nihon Denshi Kabushiki Kaisha, Tokyo, both of, Japan

Original No. 4,117,340, dated Sep. 26, 1978, Ser. No. 801,812, May 31, 1977. Application for reissue Jul. 6, 1982, Ser. No. 395,853

Claims priority, application Japan, Jun. 11, 1976, 51-69103

Int. Cl.³ H01J *37/00*

U.S. Cl. 250—492.2 **6 Claims**



2. An electron beam exposure system comprising a source for emitting an electron beam; means comprising two aperture plates having multi-sided openings and an electron beam lens and a first deflecting means located between said two aperture plates, said electron beam lens serving to focus the image of the first aperture plate on the second aperture plate, said first deflecting means serving to vary the shape and size of said electron beam cross-section through the combined interceptive action of said two aperture plates; an electron optical system for converging and projecting the electron beam thus shaped onto a workpiece to expose a two-dimensional pattern element thereon; a driving means for shifting the workpiece continuously in a selected direction; a second deflecting means for stepwise deflecting the electron beam in a narrow band range on the workpiece more or less perpendicular to said selected direction; and means for generating a signal comprising a pulse each time the workpiece shifts by a certain constant amount in the selected direction, a dividing circuit for frequency dividing the said pulse signal, the output of the dividing signal being used to directly and periodically initiate the instances when the second deflecting means produces a stepwise deflection.

3. An electron beam exposure system according to claim 2 in which said signal generating means incorporates a laser interferometer.

Re. 31,631
APPARATUS FOR PRODUCING DE-BONED MEAT PRODUCTS

Archie R. McFarland, Salt Lake County, Utah, assignor to Beehive Machinery, Inc., Salt Lake City, Utah

Original No. 3,739,994, dated Jun. 19, 1973, Ser. No. 881,686, Dec. 3, 1969. Continuation of Ser. No. 129,394, Mar. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 593,532, Nov. 10, 1966, abandoned. Application for reissue Jun. 29, 1981, Ser. No. 277,675

Int. Cl.³ B02B *7/04*

U.S. Cl. 241—74 **14 Claims**

1. A de-boning machine for meat or fish materials from which [boney] *bony* components have not been removed, comprising a perforated conduit having a feed end, a discharge end, and a perforate intermediate portion; a compression type of conveyor screw rotatably mounted in said conduit and progressively decreasing in conveying capacity from feed end to discharge end thereof, a tapered extension of said conveyor screw extending beyond the perforate intermediate portion of said conduit; means for rotating said conveyor screw and screw extension; means for feeding a ground mixture of the specified meat or fish material into the feed end of said conduit;

and annular valve means surrounding said screw extension for controlling the pressure applied by the compression screw to said material within the perforate intermediate portion of said conduit; *said annular valve means including an axially movable ring that defines, with said screw extension, a portion of a size-adjustable, elongate, annular discharge passage; said screw extension having a smooth tapered outer face and channels extending longitudinally therein to form screw flights and valleys therebetween.*

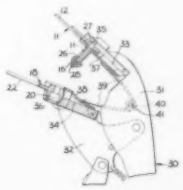
Re. 31,632
ANIMAL EAR TAGS AND APPLICATORS THEREFOR

Brian E. Murphy, Hawera, and John R. Burford, Palmerston North, both of New Zealand, assignors to Allflex International Limited, Palmerston North, New Zealand

Original No. 3,731,414, dated May 8, 1973, Ser. No. 138,575, Apr. 29, 1971. Application for reissue Oct. 1, 1979, Ser. No. 80,487

Int. Cl.³ G09F *3/12*

U.S. Cl. 40—301 **9 Claims**



1. An animal ear tag comprising a first component formed of resilient material having a hollow stem with a flanged outer end; a hollowed spike of hard material fitted on the flanged end of the hollow stem; and a second component formed of a resilient material having a boss with a hole of smaller cross-sectional size than the largest cross-sectional size of the hollowed spike, the second component being positionable on the stem adjacent the hollowed spike, the hollow in said stem and said spike being adapted to receive a support rod for positioning said stem within said hole in said boss during installation of said tag.

PLANT PATENTS

GRANTED JULY 17, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,258

CARNATION PLANT

Leonard E. Carrier, 1911 Sheridan Rd., Encinitas, Calif. 92024

Filed Dec. 30, 1982, Ser. No. 454,739

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct cultivar of carnation plant named White Melody substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a very vigorous and free-breaking plant habit, and strong and straight stems; superior resistance to soil-borne diseases such as *Fusarium oxysporium* and *Fusarium roseum* and other root-rots such as damping off, water molds, and the like; large serrated flowers which open fully without bursting the calyx and causing "splits"; a distinctive and attractive white flower color which fades evenly and beautifully; and good heat tolerance which is superior to that of the parent lines and the so-called "Sim".

5,259

MINIATURE ROSE PLANT

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Feb. 3, 1983, Ser. No. 463,534

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by buds and flowers of orange-red.

5,260

MINIATURE ROSE PLANT

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Feb. 3, 1983, Ser. No. 463,535

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by buds and flowers of creamy yellow.

PATENTS

GRANTED JUL. 17, 1984

ERRATA

For CLASS	See PATENT NO.
446–462	4,459,777
165–151	4,459,917
346–207	4,460,199
376–268	4,460,536
434–232	4,460,580
524–005	4,460,720
524–035	4,460,721
548–105	4,460,768
224–222	4,461,030

PATENTS

GRANTED JULY 17, 1984

GENERAL AND MECHANICAL

4,459,703

SEAT PROTECTION DEVICE FOR SKIERS

Paulette U. Kosmas, 6376 Lake Shore Dr., San Diego, Calif. 92119, and Donna M. Lawlor, Park West Condo B-1, Snyderville, Utah 84060

Filed Jan. 24, 1983, Ser. No. 460,373
Int. Cl.³ A41B *13/10*
U.S. Cl. 2—48 **8 Claims**

1. A seat protective device for skiers comprising:
a belt for fastening around the waist of a skier;
an elongated seat flap container positionable along the outer surface of said belt;
a seat protection flap housable within said container and connected to the interior thereof;
said seat flap being of a width and length to cover seat of a skier;
said container having a length along said belt for accommodating said flap width;
openable access means in said container for allowing the unconnected portion of said flap to be removable from within said container to cover the seat of a skier and returnable to within said container when not in use.

4,459,704

METHOD OF FORMING CLOTH INTO THREE-DIMENSIONAL SHAPES AND THE ARTICLES PRODUCED BY THAT METHOD

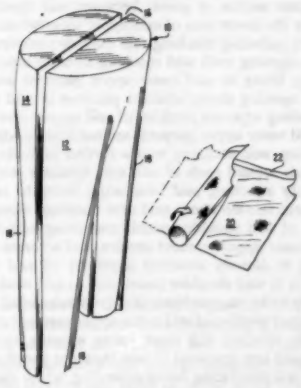
I. Weir Sears, Davenport; John E. Hostetler, Bettendorf, and William H. Hulsebusch, Dewitt, all of Iowa, assignors to Apparel Form Company, Davenport, Iowa

Continuation-in-part of Ser. No. 289,254, Aug. 3, 1981, abandoned. This application Jul. 6, 1982, Ser. No. 393,824
Int. Cl.³ A41B *1/00*; A41D *1/06*; B28B *11/08*
U.S. Cl. 2—69 **15 Claims**

1. A method of forming cloth into a predetermined three-dimensional shape comprising the steps of:
(a) constructing a preformed shell of unfinished cloth;
(b) placing said preformed shell over an expandable mold having a contour corresponding to the contour of said predetermined three-dimensional shape;
(c) expanding said mold sufficient to place the preformed cloth shell in tension;
(d) treating the cloth shell while on said expanded mold so that said shell will retain the predetermined three-dimensional shape after removal from said mold;
(e) retracting said mold; and
(f) removing the treated cloth shell from said mold.

12. The cloth forming method of claim 1 wherein said cloth shell has a shape which approximates that of said mold and wherein said cloth shell is equal to or slightly larger than the unexpanded mold but smaller than the expanded mold, thereby placing the entirety of said cloth shell in generally uniform tension upon expansion of the mold.

15. A method of forming cloth into a three-dimensional shape comprising the steps of:
(a) pretreating an unfinished cloth by heating said cloth to a temperature within about 75 degrees F. but below its heat setting temperature while maintaining said cloth in tension in the warp direction and without tension in the fill direction;
(b) constructing a shell of predetermined configuration from said pretreated cloth;
(c) placing said shell over a mold having a size and configuration relative to the size and configuration of the shell to



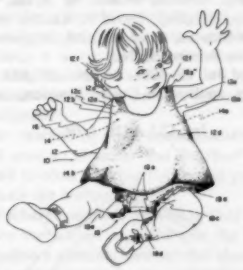
place the entirety of the cloth shell in generally uniform tension;
(d) treating the cloth shell while on said mold so that the cloth is set and said shell will retain the predetermined three-dimensional shape after removal from said mold; and
(e) removing the treated cloth shell from said mold.

4,459,705

GARMENT WITH INTERFACING EXTENDED TO FORM LOWER BODY SUIT

Joan M. Langford, 1901 Yorkgate Dr., Raleigh, N.C. 27612

Filed Jan. 19, 1983, Ser. No. 432,538
Int. Cl.³ A41B *1/22*
U.S. Cl. 2—105 **3 Claims**



1. A single piece garment having the appearance of a two-piece upper and lower garment comprising: an outer upper garment section that includes neck and arm openings, shoulder areas, upper chest and back areas disposed below said shoulder areas, and a lower area extending below said upper chest and back areas; said shoulder areas including a pair of shoulder panels that extends from said upper chest area to said upper

back area so as to define said neck opening therebetween and wherein said arm openings are defined and formed in part by said same shoulder panels and wherein each shoulder panel includes a substantial transverse width for covering a substantial portion of an individual's shoulder when the same is worn by that individual, and wherein said shoulder panels of substantial transverse width effectively separates said neck opening from said arm openings; an interfacing lining secured interiorly of said upper garment section and secured directly to said shoulder panels thereof and extending under and across said shoulder panels to form an inner garment lining thereabout; stitch means securing said interfacing lining to said upper garment section at points between said shoulder panels and above the lower area of said upper garment section; said stitch means including stitching that extends completely around said neck opening with said stitching directly attaching said interfacing lining to said outer upper garment section about the neck opening along adjacent portions of said shoulder panels and along adjacent portions of said upper chest and back areas of said outer upper garment section that lie adjacent said neck opening; said stitching means further including stitching that extends around each of said arm openings with said stitching directly attaching said interfacing lining to said outer upper garment section about said arm openings along adjacent portions of said shoulder panels and along adjacent portions of said outer upper garment section; and wherein said interfacing lining is directly attached interiorly of said upper garment section to said shoulder panels and to said neck and arm openings in order to provide a closely attached full inner lining for the upper portion of said outer upper garment and wherein said closely attached full inner lining extends upwardly from at least said arm openings to said shoulder panels and neck openings; said interfacing lining extending below said arm openings in an unattached and hanging fashion with said interfacing being spaced from the lower area of said upper garment section; and wherein said interfacing lining extending below said arm openings forms a bloomer type garment that is itself independent of said outer upper garment section for enclosing a portion of a subjects's mid-body area and including leg openings therein for allowing the legs of the subject to extend therethrough, whereby the interfacing lining of said single piece garment forms an upper closely attached lining for the outer upper garment section and at a point above the lower area of said upper garment section and below said arm openings separates therefrom to form said bloomer type garment about a portion of the subject's mid-body area.

4,459,706

DISPOSABLE PROTECTIVE CAP AND PROCESS AND APPARATUS FOR ITS PRODUCTION

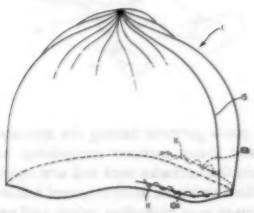
Rory J. M. Smith, Hebden; Brenda M. Sykes, Cross Hills; Roger S. Terry, Keighley; David A. Coates, and Philip B. Gower, both of Skipton, all of England, assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Jul. 29, 1981, Ser. No. 287,832

Claims priority, application United Kingdom, Jul. 31, 1980, 8025013

Int. Cl.³ A42B 1/04

U.S. Cl. 2—195 **17 Claims**



1. A disposable protective cap formed from a rectangular sheet of nonwoven fabric having a pair of opposed side edges and a pair of opposed end edges, said sheet being pleated along longitudinal fold-lines parallel to said opposed pair of side edges, and said pair of opposed side edges being secured together, the pleats being secured together at one end of said pleated sheet and the other end being partly elasticated to provide an expandable and contractable opening for the head by means of at least one length of elastic material secured to only a portion of the length of said opening.

4,459,707

EAR PROTECTING DEVICE

John P. Stallings, Indianapolis, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed Aug. 23, 1982, Ser. No. 410,726

Int. Cl.³ A42B 1/06

U.S. Cl. 2—209 **22 Claims**

1. In an ear protecting device for protecting a wearer from disturbing noise levels, which device is comprised of: a connecting member and a pair of muffs suitable for covering a wearer's ears, said muffs being suspended from opposite portions of the connecting member, said muffs having an inner surface and an outer surface: the improvement comprising; sound attenuating muffs which are permeable to water vapor, each said muff being at least partially porous, pores on said inner surface of each said muff being openly connected with pores on said outer surface of each said muff, each said muff having a specific airflow resistance of at least 30,000 SI rayls, each said muff having a permeance of at least 2 metric perms.

4,459,708

JOINT PROSTHESIS

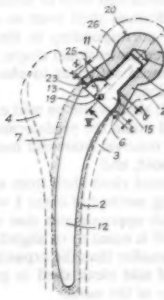
Bernard Buttazzoni, Le Galion 23 boulevard Augustin Cieussa, Marseille, France (13007)

Continuation of Ser. No. 165,743, Jul. 3, 1980, abandoned. This application Sep. 9, 1982, Ser. No. 416,335

Claims priority, application France, Jul. 10, 1979, 79 17911

Int. Cl.³ A61F 1/04

U.S. Cl. 3—1.91 **7 Claims**



1. A joint prosthesis comprising:

(a) an implant element having a collarless stem for fitting rigidly into a cavity provided in a bone structure, and an

end piece which projects from an end face of said implant stem, said collarless stem having no edge for limiting its insertion into said cavity in order to allow the positioning of said implant stem with said end face recessed into said cavity;

(b) an articular member formed in one piece and having a housing therein for active sliding engagement with said end piece, said articular member having an abutting edge adapted for direct abutment against a resected surface of the bone structure surrounding said cavity;

(c) said articular member being mounted on said end piece for continual sliding with respect thereto in each direction along an axis substantially parallel to the perpendicular from a surface including said abutting edge, said axis having an inclination in the range of about 0° to about 15° with respect to said perpendicular; and

(d) locking means for preventing said articular member from rotating with respect to said implant stem about said axis whereby a permanent physiological support with no twisting moment is provided for said abutting edge against the supporting edge when the prosthesis is in use, thereby avoiding the transmission of axial compression forces from the articular member to the bone structure through said implant stem.

4,459,709

ARTIFICIAL LIMB PROSTHESIS

Joseph M. Leal, and James M. Malone, both of Tucson, Ariz., assignors to U.S. Manufacturing Company, Pasadena, Calif.

Filed Nov. 16, 1981, Ser. No. 321,447
Int. Cl.³ A61F 1/08
U.S. Cl. 3—2 **5 Claims**

1. A method for making an artificial limb for attachment to a stump of an amputee, comprising the steps of:

wrapping a layer of casting tape around a mold of the stump;

allowing the casting tape to harden and form a cup-shaped shell with a rigid wall formed by the hardened casting tape itself, in which the inner surface of the wall conforms to the shape of the mold and at least a bottom portion of the wall is porous to air and water;

inserting the hardened shell of casting tape into an enlarged cup-shaped region formed by a plurality of circumferentially spaced-apart fingers at the end of a main structural member; and

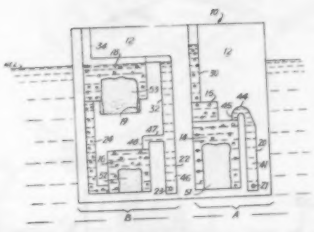
wrapping an outer layer of casting tape around the outside of the fingers and the shell and allowing the outer layer of casting tape to harden so that the outer layer of casting tape is integral with the hardened casting tape shell in the spaces between the fingers to form a solid wall of a socket at the end of the main structural member, in which the fingers are embedded between the shell and outer layer of casting tape, and each of the fingers is positioned to overlap the stump when the latter is inserted into the socket portion of the artificial limb.

4,459,710

PASSIVE DISPENSER

George B. Keyes, and Randall G. Richards, both of Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Filed Oct. 18, 1982, Ser. No. 434,762
Int. Cl.³ E03D 9/02
U.S. Cl. 4—228 **17 Claims**



1. A passive dispenser for containing a quantity of a first solution and a second solution and for codispensing a predetermined volume of said first solution and said second solution into a body of liquid in which said passive dispenser is placed in response to the level of said body of liquid being lowered from a first elevation to a second elevation, the passive dispenser comprising:

a first dispensing section comprising:

a first product chamber, said chamber containing a water-soluble cake forming, upon dissolution, the first solution;

a vent conduit extending upwardly from the top of the first chamber, and

an inlet/outlet pathway providing fluid communication between said chamber and the body of liquid, said pathway entering the chamber at a predetermined distance below the top thereof and adapted to discharge the volume of solution thereabove by siphon flow, and

a second dispensing section in separate relationship from the first, said second dispensing section comprising:

a second product chamber containing a water-soluble cake forming, upon dissolution, the second solution;

a third product chamber, said third chamber being disposed at least partially above said second chamber, and containing a water-soluble cake also forming, upon dissolution, the second solution;

a vent conduit extending upwardly from the top of the third chamber;

a conduit establishing fluid communication between the second product chamber and the third product chamber, said conduit entering the second product chamber proximate the bottom thereof;

a refill/discharge pathway providing fluid communication between the second chamber and the body of liquid, said pathway entering said second chamber as to provide a vertical barrier to flow therefrom, and

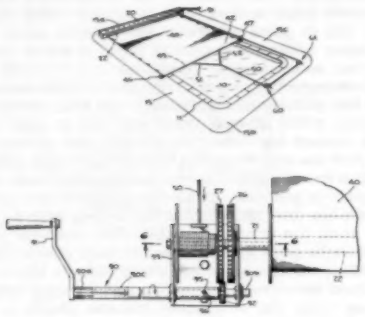
conduit means to vent said second chamber and said refill-/discharge pathway, said conduit means extending upwardly from the top of the refill/discharge pathway,

whereby, when the body of liquid is lowered from the first elevation to the second elevation, a predetermined volume of solution in the first chamber is dispensed from the first dispensing section by siphon flow and a predetermined volume of solution in the second and third chambers is dispensed from the second dispensing section by gravity flow.

4,459,711
SWIMMING POOL COVER ASSEMBLY

Donald W. Sartain, 36 Mobile La., Ventura, Calif. 93001; Lee C. Paxton, and Melvin R. Kastl, both of Carmichael, Calif., assignors to Donald W. Sartain, Ventura, Calif.

Filed Dec. 13, 1982, Ser. No. 449,556
Int. Cl.³ E04H 3/19
U.S. Cl. 4—502 2 Claims



1. An easily extendible and retractable swimming pool cover assembly capable of being operated by a single person and comprising, in combination:

a cover sheet adapted to be horizontally extended from one end of a swimming pool to the other, and being of sufficient length and width to rest upon the decking surrounding the pool when the pool is covered;

a drum disposed above the pool decking adjacent to and generally parallel to said one end of the pool;

a main shaft rotatably supporting said drum;

a spool disposed adjacent one end of said drum at one side of the pool and supported for rotation about the axis of said main shaft but independently of said drum;

said cover sheet having one end secured upon said drum and its other end free for extension lengthwise of the pool;

a stiffening member carried by said other end of said cover sheet;

a plurality of side fasteners secured in spaced locations along the side edges and the free end of said cover sheet;

a rope whose length is more than double the length of the open top of the pool, one end of said rope being split into a V-shaped configuration providing two separate ends each of which is secured to said other end of said cover sheet on a respective side of the lateral center thereof;

the other end of said rope being secured upon said spool, said rope and cover sheet being respectively secured to said spool and drum in opposite rotational senses;

drive means selectively operable for driving either said drum or said spool so as to either retract or extend said cover sheet;

separate pulley means removably attached to the pool decking at substantially the lateral center of the other end of the pool, and at the far corner of the pool on the same side where said spool is located, respectively, so as to support said rope in a tensioned loop configuration; and

a plurality of anchor means secured to the pool deck for cooperating with corresponding ones of said side fasteners;

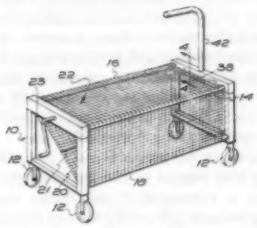
the winding in of said cover on said drum being driven by the rotation of said drive means in one direction, while the winding in of said rope and paying out of said cover is driven by rotation of said drive means in the other direction;

said side fasteners being wound upon said drum with said cover sheet when in its retracted position.

4,459,712
HOSPITAL BED

Rajendra K. Pathan, 55 Wheldrake Rd., Sheffield 5, England

Filed May 27, 1982, Ser. No. 382,573
Claims priority, application United Kingdom, Jun. 11, 1981, 8117975
Int. Cl.³ A61G 7/08
U.S. Cl. 5—81 C 7 Claims

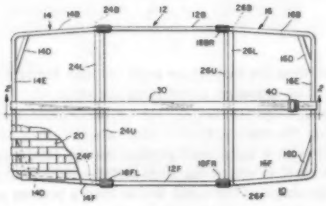


1. A hospital bed comprising a frame, a pair of rollers extending longitudinally of the frame along the opposite sides of said frame in the region of reclining patient height, an endless length of flexible material extending along the rollers forming a patient support surface therebetween, means for traversing the length of flexible material around said rollers for moving the patient support surface laterally to turn the patient including drive means for rotating at least one of said rollers and, restraining means for preventing said endless length of flexible material from "riding" along said rollers, that is to say for preventing the overall width of said flexible material from becoming reduced longitudinally of said rollers, said restraining means comprising means at the lateral edges of said endless length of flexible material whereby said flexible material lateral edges engage said frame.

4,459,713
DOUBLE WIDTH CHAISE LOUNGE

Raymond A. Fry, 146 Pile St., Ramona, Calif. 92065

Filed Aug. 31, 1982, Ser. No. 413,408
Int. Cl.³ A47C 19/00
U.S. Cl. 5—211 5 Claims



1. A chaise lounge comprising:

a planar center frame section including at least two side parts;

first and second end frame sections pivotably attached at opposite ends of said center frame section, each end frame section including at least two side portions and an end portion, and the chaise lounge may be disposed in at least two positions:

I. a cot position with said first and second end frame sections pivoted to be planar with the center frame section; and

II. a recliner position with said first end frame section extending up from said center frame section to serve as

a seat backing and said second end frame section extending down from said center frame section to serve as a leg rest;

legs for supporting the chaise lounge; supporting material extending between said side parts and said end portions; an adjustable support strap extending below said supporting material and between said end portions for supporting said support material when the chaise lounge is disposed in at least said cot position and said recliner position; and an adjustor for changing the tension on of said support strap to control sagging of said support material;

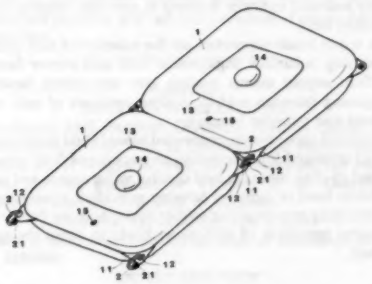
wherein the chaise lounge is at least three and one-half feet wide at said center frame section such that two people may sit or lie in the chaise lounge at the same time, and said adjustor allows different tensions in said supporting strap when the chaise lounge is disposed in said cot position and said recliner position, and further comprising two leg cross braces, and two cross brace straps attached to said support strap and each cross brace strap secured to a corresponding one of said cross leg braces.

4,459,714

MULTI-FUNCTION CUSHION AND ITS ASSEMBLIES

Jinn P. Lin, No. 7, Lane 85, Jiing Shing Rd., Taipei, Taiwan

Filed Aug. 31, 1981, Ser. No. 298,254
Int. Cl.³ A47C 27/10; A47G 9/00
U.S. Cl. 5—455 **1 Claim**



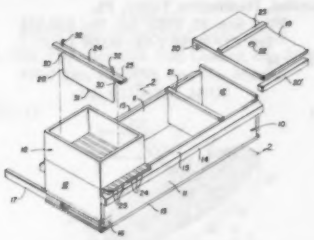
1. A portable multi-function cushion assembly comprising: a plurality of hollow inflatable square shaped cushions extending side by side in a contiguous array, each said cushion made up of a tough and flexible plastic material having (i) a centrally positioned circular I-beam band having passages therethrough disposed in adhering communication with a pair of opposing inside surfaces of each said cushion and (ii) a second I-beam band having passages therethrough disposed in adhering communication with said pair of opposing inside surfaces and surrounding said circular I-beam band,providing means for adjusting to an external impact force applied to each said cushion to promote the stability thereof, a lug at each corner of each said cushion, each lug having a hole therethrough, adjacent respective corners of side by side cushions defining respective pairs of adjacent lugs, and intercushion connecting links, each said link disposable through a respective pair of said adjacent lugs, each said link having two ends forming an opening therebetween, said ends having flat semi-circular faces, releasably matable fastening studs and holes in each said face for closing said opening.

4,459,715

BEEHIVE

John Q. Adams, IV, 1206 Foxcroft Rd., Richmond, Va. 23229

Continuation-in-part of Ser. No. 236,112, Feb. 19, 1981, Pat. No. 4,349,927. This application Sep. 16, 1982, Ser. No. 418,812
Int. Cl.³ A01K 47/00, 47/02
U.S. Cl. 6—1 **3 Claims**



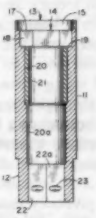
1. A beehive comprising a long hive body of rectangular cross section having two vertical side walls of equal heights and two end walls whose top edges are spaced above the top edges of the side walls, whereby the hive body can accommodate either standard frames or top bar frames resting upon the top edges of said side walls, a top board for the hive body having opposite end portions adapted to rest on the top edges of said end walls, a frame adapted for placement within the hive body in a vertical position between the side walls of the hive body and comprising a top bar adapted to rest on the top edges of said side walls and a frame body dependingly secured to the top bar and having roughened portions at least on the interiors of its opposite sides, a screen section fixed to the bottom face of said top bar within the confines of the frame body, and the frame body being constructed of wire and having opposite side top terminal hooks adapted to be driven downwardly into the top of said top bar for securely anchoring the wire frame body thereto.

4,459,716

COMBINATION GAUGE-SOCKET WRENCH

Mario Valadez, 9806 Cascade Valley, San Antonio, Tex. 78245

Filed Sep. 23, 1982, Ser. No. 421,984
Int. Cl.³ B25F 1/00
U.S. Cl. 7—100 **3 Claims**



1. A combination gauge-socket wrench comprising

a generally tubular body including an upper cylindrical outer surface,

a gauge circumferentially about the upper end of said gauge-socket wrench,

said gauge increasing in thickness uniformly along its length,

indicia in said outer surface in proximity to said upper end corresponding to the thickness through a selected portion of said gauge,

a socket wrench below said gauge, and

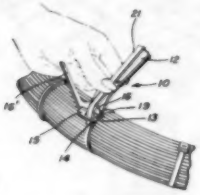
an opening in said body adapted to receive the stem of a drive tool for installing and removing spark plugs.

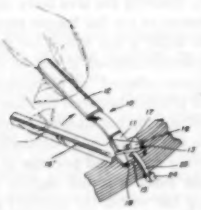
4,459,717

TOOL FOR CABLE TIE INSTALLATION AND REMOVAL

William M. Halstead, Baltimore, Md., assignor to Henry Mann Incorporated, Huntingdon Valley, Pa.

Filed Sep. 15, 1983, Ser. No. 532,354
Int. Cl.[3] B25F *1/00*; B26B *13/22*
U.S. Cl. 7—134 4 Claims





1. A hand tool, for installation of a self-locking tie band about a cable or bundle of electrical conductors or the like, having means whereby to tension the tie band for securing the bundle and to remove the excess of the band comprising:

a relatively thin rigid plate having an elongated handle extending therefrom;

the plate including a relatively narrow, transversely extending, open-ended rectangular slot disposed at the bottom of the free end section opposed to the handle;

the slot being adapted to receive therethrough the free length of the tie band loosely assembled to the cable;

the tool being adapted to be supported on its bottom element of the slot defining structure and against the self-locking head of the loosely assembled tie band;

whereby with the tool so supported and with said free tie band length drawn through the slot and tensioned and using the supported bottom as a fulcrum, the tool is further adapted to be rotated whereby to draw the tie band through the self-locking head until the cable or bundle is secured;

a blade overlying and pivotally mounted on said plate and having a cutting edge operatively associated with the face of the slot defining structure so as to form a cutting couple therewith;

a handle extending from the blade in operative association with the first recited handle; and

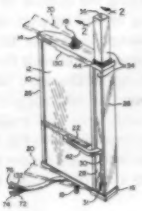
the pivot point of the blade being so located and the cutting edge thereof being so contoured that the blade during its shearing stroke perforce initially engages the tie band at an outer edge and proceeds transversely across the slot whereby to continuously exert a clamping force which urges the tie band into, and against the back wall of, the slot.

4,459,718

FLUID PRESSURE OPERATED RECIPROCATING MECHANISM

Delbert C. Hewitt, and Gabriel V. Fasolino, both of P.O. Box 365, Wilsonville, Oreg. 97070

Filed Jun. 4, 1982, Ser. No. 384,941
Int. Cl.[3] B60S *1/12*
U.S. Cl. 15—250 B 4 Claims



2. A side view mirror mechanism comprising

(a) a mirror housing having a mirror face,

(b) means on said housing for mounting it on a vehicle,

(c) a piston head having opposite fluid drive surfaces,

(d) a cylinder housing enclosing said piston head and having opposite fluid drive inner surfaces associated with respective fluid drive surfaces of said piston head,

(e) a piston rod having first and second end portions,

(f) said first end portion of said piston rod being integral with said piston head,

(g) said second end portion of said piston rod projecting slidably through one end of said cylinder housing,

(h) means securing said second end portion of said piston rod to said mirror housing whereby said piston head is stationary and said cylinder housing is movable relative to said piston head,

(i) a wiper blade supported on the exterior of said cylinder housing in surface engagement with said mirror face,

(j) fluid supply means leading into said piston head and opening between said fluid drive surfaces of said piston head and cylinder housing,

(k) control valve means connected to said fluid supply means and arranged for connection to a source of fluid pressure,

(l) and cycling means in said control valve means and in said piston head or cylinder housing providing advancing and retracting movement of said cylinder housing for reciprocating operation of said wiper blade to clean the mirror face.

4,459,719

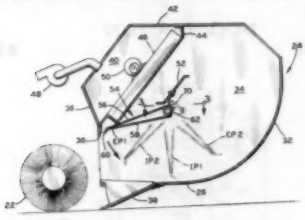
SWEEPING MACHINE WITH DIRT AND DEBRIS CONTROL FLAP

Richard H. Notestine, Toledo, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Feb. 14, 1983, Ser. No. 465,930
Int. Cl.[3] E01H *1/04*
U.S. Cl. 15—349 20 Claims

17. In a machine for sweeping a surface comprising a frame, wheel means supporting the frame on the surface, a rotatable sweeping brush carried by said frame, a hopper carried by said frame near said sweeping brush, said hopper comprising a bottom wall, side walls, a top wall, a forward wall, and a rear wall, a filter in said hopper extending between said side walls, said hopper defining a dirt and debris-receiving chamber and an opening near said sweeping brush through which dirt and debris are received from said brush, said hopper further defining a filter chamber with said filter on the side of said filter opposite said dirt and debris-receiving chamber, vacuum means communicating with said filter chamber for drawing air through said hopper opening, through said dirt and debris-receiving chamber, through said filter, and through said filter

chamber with air-borne dirt collected on said filter on the side toward said dirt and debris-receiving chamber, and a baffle wall extending across said filter, said baffle wall having a forward edge toward the forward wall of said chamber and a rear edge toward the rear wall of said chamber, the improvement comprising a control flap pivotally mounted in said chamber above said bottom wall and near the rear edge of said baffle wall, said flap having a first extreme position in which said flap closes the space between said rear edge of said baffle wall and an upper edge portion of said hopper opening, said flap having a second extreme position in which an outer edge thereof is spaced closer to the forward wall of said hopper,



with said extreme positions defining an angle of more than 90°, said flap having a first intermediate position in which said outer edge of said flap is positioned close to said bottom wall, and said flap having a second intermediate position in which the outer edge is spaced below the upper edge of said hopper opening, whereby filter dirt collected on said baffle wall and on said flap can be directed outside said hopper opening when said hopper is in a dumping position, said flap also being effective to move debris from said bottom wall toward said forward wall when said control flap is moved from said first extreme position to said second extreme position through said first intermediate position, and remotely-controlled means for moving said flap.

4,459,720

SUCTION NOZZLE UNIT

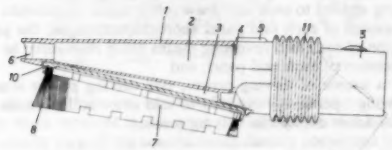
Heinz-Jürgen Ahlf, Bergisch Gladbach; Wieland Gühne, Remscheid, both of Fed. Rep. of Germany, and Bernd Fink, deceased, late of Wuppertal, Fed. Rep. of Germany (by Martina Fink, heiress), assignors to Vorwerk & Co Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jan. 11, 1982, Ser. No. 338,567

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1981, 3100841

Int. Cl.³ A47L 9/06

U.S. Cl. 15—398 **7 Claims**



1. A suction nozzle unit for selectively aspirating dust from flat surfaces and from joints or edges, comprising a connecting suction member having an axis; an elongated body part connected with said connecting suction member and forming two separate air passages having different cross sections and both extending in a direction of elongation of said body part; a joint nozzle suitable for aspirating dust from joints and edges and connected with one of said passages; a surface nozzle suitable for aspirating dust from flat surfaces and connected with the other of said passages; and means for alternatively communicating each of said passages with said connecting suction member so as to actuate a respective one of said nozzles, said nozzles being connected with said air passages so that through said joint nozzle air is aspirated in a direction of said axis of said suction member part, whereas through said surface nozzle air is aspirated in a direction which is substantially normal to the direction of said axis of said suction member.

4,459,721

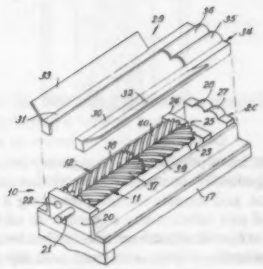
POULTRY SKINNING MACHINE

William J. Hill, P.O. Box 230, Ball Ground, Ga. 30107

Filed Jan. 18, 1983, Ser. No. 458,840

Int. Cl.³ A22C 21/00

U.S. Cl. 17—11 **11 Claims**



1. An apparatus for skinning poultry parts comprising:

a frame;

a pair of counter-revolving rollers including shaft means and having inter-engaging helical teeth, one roller shaft means being driven by power means to drive the other;

bearing means journalling shafts of the rollers, said bearing means being mounted on the frame;

cover means open above the rollers and supported by the frame, said cover means including shear section means adjacent an end of the rollers;

means mounted on said frame for supporting said cover means;

said helical teeth inter-engaging to convey poultry parts therealong toward said shear section means;

said shear section means extending partially over said rollers and having roller-conforming portions associating in a substantially bearing relationship with the rollers;

whereby said apparatus is adapted for removing skin from poultry products and capable of transferring detached skin below the shear section means and said skinned poultry part above the shear section means.

4,459,722

HELICAL WIRE-CONICAL WEDGE GRIPPING DEVICE HAVING CONICALLY FORMED ROD ENDS BETWEEN WEDGE AND COMPLEMENTARY SOCKET THEREFOR

Edward Dziedzic; Gary R. Dickerson, and David P. Eppinger, all of Centralia, Mo., assignors to A. B. Chance Co., Centralia, Mo.

Filed May 27, 1982, Ser. No. 382,773

Int. Cl.³ F16G 11/02

U.S. Cl. 24—122.6 **14 Claims**

1. A deadending device for an elongated cable or the like, comprising:

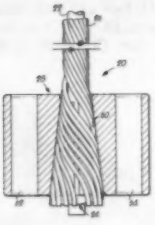
an elongated, tapered block configured to engage said cable and presenting a generally frustoconical surface, said block including a plurality of separate block sections cooperatively presenting said outer surface;

an elongated metallic wire element for positioning along the length of said cable and about said block, including:

an elongated cable-gripping portion having a plurality of preformed, substantially aligned and helical cable-grip-

ping convolutions along the length thereof and configured for application to said cable, said cable-gripping convolutions presenting a first longitudinal axis;

a block-conforming portion adjacent one end of said cable-gripping portion and configured to be disposed about said block, said block-conforming portion having been permanently preformed beyond the elastic limit of said wire element prior to disposition thereof about said block to present an arcuate section configured to generally define a portion of an imaginary frustoconical surface generally complementary with said block outer surface, said arcuate section presenting a second longitudinal axis substantially aligned with said first longitudinal axis, said arcuate section further being configured to resiliently engage and hold said block sections in engagement with said cable without the need for taping or the like of the block sections to the cable; and



socket structure having a tapered bore therein receiving said block and block-conforming portion.

4,459,723

SLIDE FASTENER STRINGER AND METHOD AND DEVICE FOR FORMING AN END THEREOF

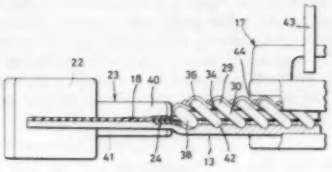
Shinji Takano, Kurobe, and Yoshiyuki Horita, Toyama, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed May 6, 1982, Ser. No. 375,455

Claims priority, application Japan, May 7, 1981, 56-67695

Int. Cl.³ A44B *19/36*

U.S. Cl. 24—434 **10 Claims**



1. A slide fastener stringer comprising:

(a) a stringer tape; and

(b) a row of continuous helically coiled coupling elements of thermoplastic synthetic resin mounted on and along a longitudinal edge of said stringer tape, each said coupling element including a coupling head extending beyond said longitudinal edge, a pair of upper and lower legs mounted on said longitudinal edge and extending from said coupling head in a common direction, and a connecting portion joined to one of said legs of an adjacent coupling element remotely from said coupling head, said coupling elements including an endmost complete coupling element located at an end of the slide fastener stringer, its said connecting portion extending angularly from said lower leg of said endmost coupling element and terminating in a free end disposed remotely from said longitudinal edge of said stringer tape and fused to said stringer tape, said stringer tape having an element-free portion adjacent to said endmost complete coupling element, said upper leg of said endmost complete coupling element being lower than the upper legs of the other coupling elements.

4,459,724

PILE FABRIC CUTTING APPARATUS

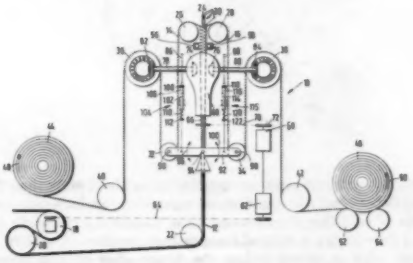
Bogdan Bogucki-Land, Offenbach, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Continuation of Ser. No. 135,335, Mar. 31, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 365,278

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1979, 2914245

Int. Cl.³ D06C *13/10*

U.S. Cl. 26—13 **8 Claims**



1. A slitting apparatus for separating face-to-face pile fabrics, double plush ware or the like, into two panels, comprising:

(a) a pair of delivery means for feeding said ware;

(b) slitting means disposed between said delivery means for cutting said pile forming two panels;

(c) a pair of draw roller means, each said roller means drawing a panel of ware under tension away from said slitting means;

(d) a pair of reversing means, each said reversing means being disposed in the draw off path to each panel between said delivery means and each said draw roller means, the position of each said reversing means being responsive to the tension of each said panel;

(e) means for causing the position of each said reversing means to be responsive to the tension of each said panel coupled to said reversing means;

(f) a pair of sensing means for sensing the position of said reversing means;

(g) a pair of braking means for braking said draw roller means, each said braking means being responsive to a respective sensing means for varying the amount of braking applied to each said draw roller means to maintain the tension of each said panel approximately equal, the position of each said reversing means being responsive to the tension of each said panel; and

(h) a source of driving power, said driving power source being operatively coupled to said draw roller means by common differential driving means.

4,459,725

METHOD FOR ATTACHING A BALLISTIC HOOD AT A PROJECTILE BODY

Jacques Mariaux, Herrliberg, and Rudolf Rossman, Zürich, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Jul. 22, 1982, Ser. No. 400,661

Claims priority, application Switzerland, Aug. 5, 1981, 5043/81

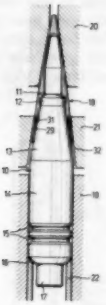
Int. Cl.³ B21K *21/06;* **B23D** *19/02, 11/02*

U.S. Cl. 29—1.2 **7 Claims**

1. A method for the attachment of a ballistic hood at a

projectile body possessing a substantially conical smooth surface for receiving the hood, comprising the steps of:

providing the ballistic hood at an inner surface thereof intended to contact the conical smooth surface of the projectile body with substantially ring-shaped deformable ribs and an adhesive material;



centering the projectile body in a first centering tool;

centering the ballistic hood in a second centering tool; and

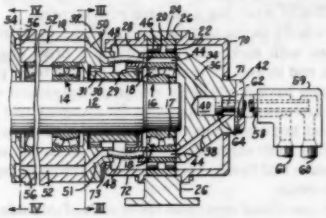
pressing the inner surface of the ballistic hood provided with the ring-shaped deformable ribs and the adhesive material by means of a pressing tool onto the substantially conical smooth surface of the projectile body.

4,459,726

TEMPERATURE CONTROL FOR SHELL TYPE ROLLS

Robert D. O'Brien, and Elizabeth C. Schmecker, both of Seymour, Conn., assignors to USM Corporation, Farmington, Conn.

Filed Dec. 21, 1981, Ser. No. 332,481
Int. Cl.³ B21B *13/02*
U.S. Cl. 29—116 AD **8 Claims**



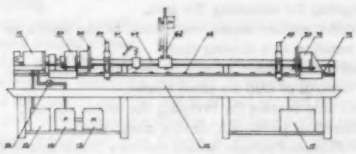
1. In a shell type roll mounted for rotation about a non-rotatable beam received in the inner race of a triple race bearing, the middle race of the bearing being flexibly connected to the shell roll for rotation therewith under conditions of axial misalignment and the outer race of the bearing being carried by a support; the improvement comprising temperature control means for the shell roll including passages extending lengthwise in the shell roll adjacent its periphery, conduits extending through the middle race to a central axial bore in an extension of the middle race, flexible means connecting the passages and the conduits to accommodate conditions of misalignment between the middle race and the shell roll, and means including a rotary joint connecting portions of the central bore to an inlet and an outlet for circulating temperature control fluid through the roll passages.

4,459,727

MACHINE FOR FABRICATING DRIVESHAFTS

Robert Burton, N. 87 W. 17044 Rosslyn Ave., Menominee Falls, Wis. 53051, and Glenn Parma, 1104 Biemert St., Green Bay, Wis. 54304

Filed Oct. 29, 1981, Ser. No. 316,499
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—238 **6 Claims**



1. A machine for fabricating driveshafts comprising:

a. a frame including a support bed;

b. a tailstock mounted on said support bed;

c. means for mounting said tailstock on said support bed;

d. a centering spindle mounted on said tailstock having an axis;

e. a headstock;

f. means for mounting said headstock on said support bed;

g. a driving spindle mounted on said headstock coincident with said centering axis;

h. a driving spindle phasing plate receivable in said driving spindle for mounting a first rotary workpiece coincident with said axis, means for locking the rotation of said driving spindle phasing plate;

i. a tailstock phasing plate receivable in said centering spindle for mounting a second rotary workpiece coincident with said axis, means for locking the rotation of said tailstock phasing plate in a specific positional relationship to said driving spindle phasing plate;

j. means on said frame for pushing said driving spindle along said axis toward said centering spindle whereby the first and second rotary workpieces are joined in a particular angular relationship with respect to each other.

4,459,728

SCREW CLAMP PIN EXTRACTOR

Jean-Pierre Gaquère, Acheux en Amienois, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Aug. 6, 1982, Ser. No. 405,799
Claims priority, application France, Aug. 13, 1981, 81 15683
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—240 **5 Claims**

1. An extractor for screw clamping pins of the type comprising a body fastened to a spreader lying between two tongs secured to a screw and a nut acting against a spring, wherein the extractor comprises:

a pneumatic motor which stops without air interruption during screwing and unscrewing;

a nose portion positioned on the motor and comprising:

a six-sided sleeve comprising a slidable ring with a hexagonal die,

a locking sleeve having two pairs of radial apertures formed therein to permit rotation of 30° with respect to a lock and terminated by a six-sided portion and which after rotation thereof provides for application under the points of the six-sided portion of the clamp pin,

said lock being fixed both in rotation with respect to an outer body and in translation with respect to the locking sleeve through shaft screws,

a protective ring engaged with an assembly of sheets,

said outer body axially slidable on the sleeve under the effect of a piston,

said piston being connected to the outer body through a stopping ring;

a connecting sleeve to fasten the nose portion to the motor,

a jack consisting of said piston with its chamber and fastened to the connecting sleeve,

an inner guide for guiding in a translational motion the connecting sleeve and in a translational motion, the locking sleeve by means of the shaft screws,

a spring for returning the jack,

a drive motion means connected to the motor to impart rotation to a driving shaft,

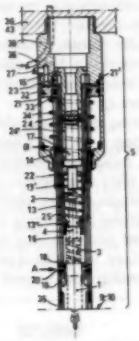
said shaft slidable axially in the driving means to permit control of said six-sided sleeve,

two stop screws for bringing the motor to stall;

a differential pneumatic device comprising:

a differential proper, which carries a diaphragm defining a first chamber into which a conduit for motor pressure leads, with a conduit controlling the jack and a second chamber into which a conduit for the reference pressure of the motor leads, said conduit being possibly adjusted through a set screw,

connecting means between the differential and the body to permit supply of the reference pressure, the arrangement of said motors, nose portion and differential being such that:



the nose portion can be engaged on the clamp pin until the protective ring is brought into contact with the surface of the sheets assembly;

when the motor rotates for unscrewing, it can, in a first period, drive the driving means which in its turn drives the driving shaft and the six sided sleeve, the latter then rotating in locking sleeve so as to drive it into rotation over 30° due to frictions in the threaded portion, thereby resulting in the locking thereof on the clamp pin, and in a second period, it permits forward motion of said six sided sleeve by pushing on the shank of the clamp pin in unscrewing the nut, and at the end of the stroke, the putting into abutment of the stop screws at the bottom of a aperture in the driving means thereby causing the motor to stall and correlatively, the operation of the differential pneumatic device which at its turn, feeds the jack through the chamber, thereby causing extraction of the pin;

when the motor rotates for screwing on, the jack is no longer fed and returns to its initial position, under the action of said spring while frictions in the threaded portions then provoke:

in a third period, the unlocking of the clamp pin,

in a fourth period, the return of all of the constitutive elements to their initial positions.

4,459,729

ABUTMENT MEMBER FOR USE IN DRIVING STUDDED METAL FENCE POSTS

Adolf P. E. Volkmann, 425 NE. 80th Ave., Portland, Oreg. 97213

Filed Jul. 18, 1983, Ser. No. 514,874

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—254 **3 Claims**

1. An abutment member for use in combination with a driving member for driving metal fence posts of the type having equally spaced projecting wire holding studs along one surface thereof, said member comprising

first and second body portions having upper and lower ends and side portions,

said first and second body portions having inwardly facing surfaces,

said first body portion comprising a flat plate-like portion and said second body portion being contoured to substantially the shape of a fence post,

recess means in the inwardly facing surface of said first body portion arranged to receive a wire holding stud of a fence post therein in a longitudinal driving engagement,

the inwardly facing surfaces of said first and second body portions being contoured to form a longitudinal opening capable of receiving a studded post therein,

said inwardly facing surfaces also having cooperating drive means with each other to provide a drive engagement from end to end for said first and second body portions,

and a ring having releasable wedging engagement with said first and second body portions for clamping said first and second body portions on a post with one or more wire holding studs engaged in said recess means and said drive means in said first and second body portions engaged with each other,

at least one of said upper and lower ends of said side portions forming a driver engaging surface.

4,459,730

TOOL FOR INSTALLING FREEZE PLUGS

Charles R. Echols, 15841 N. 66th Ave., Glendale, Ariz. 85306

Continuation of Ser. No. 182,837, Aug. 29, 1980, Pat. No. 4,341,004. This application May 17, 1982, Ser. No. 379,277

The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.

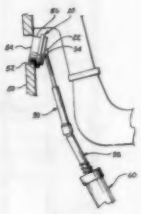
Int. Cl.³ B23P *19/04*

U.S. Cl. 29—275 **3 Claims**

1. A tool for seating a shrouded freeze plug in response to impact forces received from a source of impact forces, said tool comprising in combination:

(a) a member for imparting an impact force to the freeze plug to seat the freeze plug;

(b) a land disposed on one side of said member for engaging the shroud of the freeze plug;
(c) a driver for imparting the impact forces from the source to said member, said driver being freely disengageable from said member before, during and after seating of the freeze plug;
(d) a depression disposed in an other side of said member, said depression extending into said member from a plane defined by said other side of said member;
(e) a further land disposed upon the other side of said disc, said further land being sized different from said land to accommodate a freeze plug sized differently than the freeze plug engageable by said land, said depression being disposed in said further land;



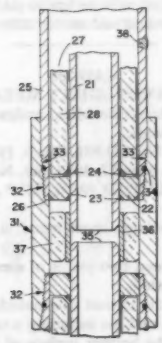
(f) a further depression disposed in said land for use with said driver to seat a freeze plug engaged by said further land; and
(g) said driver including an end mating with said depression in said member for interconnecting said driver with said member at any angle of interconnection within a cone of angles of interconnection, which cone of angles is limited solely by interference between said driver and the perimeter of said depression coincident with said other side of said member itself and for transmitting the impact forces to the freeze plug to seat the freeze plug regardless of the angle of interconnection.

4,459,731

CONCENTRIC INSULATED TUBING STRING

S. O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 182,364, Aug. 29, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 431,871
Int. Cl.³ B23Q *17/00*; B23P *11/02*
U.S. Cl. 29—405 **1 Claim**



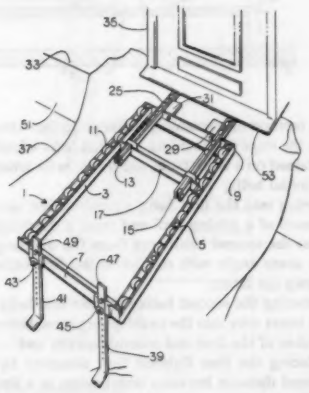
1. A method for producing an insulated, concentric tubing, hot fluid conducting apparatus comprising the steps of:
attaching annular end members to the outer surface of a first tubing adjacent to the ends thereof,
heating said first tubing to about the temperature of hot fluids to be conducted in said apparatus to elongate said first tubing,
internally threading a hollow cylindrical coupling,
threading said second tubing at the outer surfaces adjacent to the ends thereof and about where said annular end members are secured so as to permit multiple units of said insulated concentric tubing to be joined by coupling members,
cutting a first annular groove into said threading of said coupling,
cutting a second annular groove into said exterior threading of said second tubing,
inserting said first tubing inside said second tubing with spacing and insulating materials between the outside of said first tubing and the inside of said second tubing, said second tubing having a shorter axial length than said first tubing when said first tubing is elongated due to said heating,
securing said annular end members to the inner surface of said second tubing adjacent to the ends thereof when said first tubing is elongated due to said heating and sealing said inner space between said first and second tubing containing said spacing and insulating materials,
positioning a resilient sealing ring in one of said first and said second grooves, and
engaging said second tubing with said cylindrical coupling at said threaded outer surfaces such that said ring engages the other of said first and second grooves.

4,459,732

STOVE ROLLER

Robert H. Driggers, 105 Beth Dr., Greenville, S.C. 29609

Filed Sep. 21, 1981, Ser. No. 304,242
Int. Cl.³ B65G *13/12*
U.S. Cl. 29—426.3 **9 Claims**



1. A process for removing a fireplace insert from a hearth cavity for the purpose of cleaning said cavity comprising the steps of:
positioning an apparatus for moving a fireplace insert in proximity to said cavity, said apparatus comprising:
a pair of parallel rear rails having a proximal end and a distal end;
rear conveying means disposed within said rear rails;
a pair of front rails telescopingly disposed between said rear rails from extending from the distal end of said rear rails;
front conveying means disposed within said front rails;
support means for resting upon an elevated surface extending from the distal end of said rear rails;

adjustable vertical support means attached to the proximal end of said rear rails;

positioning said support means upon an elevated hearth adjacent said hearth cavity;

adjusting said vertical support means to level said rear rails;

telescoping said pair of front rails from between said rear rails into a position adjacent said insert;

elevating said insert a distance sufficient to permit said front rails to extend under said insert;

extending said front rails under said insert; and

conveying said insert across said front conveying means and said rear conveying means to permit access to said hearth cavity.

4,459,733

METHOD AND DEVICES FOR ASSEMBLY OF HELIXES INTO FACE STRUCTURES

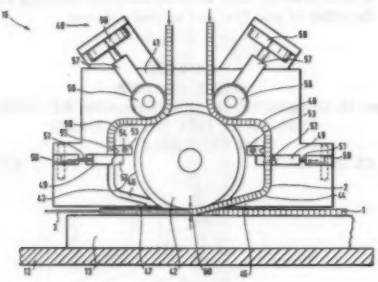
Wolfgang Bachmann, Wingertstr. 12, 6072 Dreieich, and Dieter Spahn, An der Mainbrücke 14, 6450 Hanau, Steinheim, both of Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,788

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1980, 3021562

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—433 **43 Claims**



1. A method of assembling helixes into face structures, comprising the steps of providing an initial helix which is stretched and retained on a work table, and a first helix which is attached to the initial helix;

inserting into the first helix a prestretched second helix by means of a joining tool and from a discharge conduit so that the second helix exits from the discharge conduit at an acute angle with respect to the first helix and moved along the latter;

connecting the second helix with the first helix by inserting an insert wire into the overlapping areas between the head arches of the first and second helixes; and

displacing the thus finished face structure by a predetermined distance between insert wires in a timed sequence before a subsequent such inserting step for a further helix to be inserted into the second helix.

5. A device for assembling helixes into face structures, comprising a work table for arranging an initial prestretched helix and a first helix attached to the initial helix;

a discharge conduit for supplying a second helix to be joined with the first helix;

a joining tool inserting the prestretched second helix exiting from said discharge conduit at an acute angle with respect to the first helix with movement along the latter;

means for connecting the second helix with the first helix and including an insert wire insertable into overlapping areas between head arches of the first and second helixes; and

means for transporting the thus finished face structure by a distance between insert wires in a timed sequence before inserting of a further helix into the second helix.

4,459,734

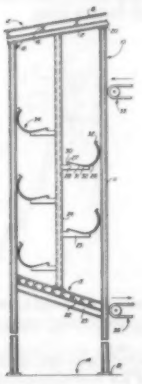
METHOD OF MAKING FRUIT STORAGE BIN

Robert H. Eubanks, Leesburg, and Robert W. Blankenship, Ocoee, both of Fla., assignors to Williams Steel Industries, Inc., Clermont, Fla.

Filed Mar. 8, 1982, Ser. No. 356,201

Int. Cl.³ B21D *39/00*; **B23P** *19/04*

U.S. Cl. 29—455 R **5 Claims**



1. A method of making a fruit storage bin for temporary storage of fruit comprising the steps of:

building a framework;

attaching a floor and ceiling to said framework;

attaching a center column between said floor and ceiling;

forming arcuate chute sections of fiberglass having an arcuate lip formed on two edges and a plurality of apertures in one lip of each chute section;

forming flat support arms of a predetermined shape having an attaching edge and a lip thereon and a chute support edge shaped to support a chute section;

aligning each support arm with a chute section prior to attaching each support arm in a predetermined position;

attaching support arms of predetermined shape in predetermined positions along said center column; and

bolting chute section arcuate lips to said arm lips to form a helical chute around said center column.

4,459,735

JOINING SHEET METAL

Edwin G. Sawdon, Marysville, Mich., assignor to BTM Corporation, Marysville, Mich.

Continuation of Ser. No. 184,951, Sep. 8, 1980, abandoned. This application May 17, 1983, Ser. No. 495,440

Int. Cl.³ B21D *39/00*; **B23P** *11/00*

U.S. Cl. 29—509 **7 Claims**

1. A method of joining sheet metal in a single operation comprising:

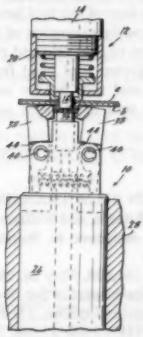
(a) assembling at least two pieces of sheet metal in an overlapping relationship;

(b) positioning a die against one outside face of the sheet metal assembly, said die including a cavity defined by an anvil forming the bottom surface of said cavity and by opposed laterally expansible side wall members mounted by pivot means for lateral pivotal movement relative to said cavity;

(c) moving a punch against the opposite outside face of the sheet metal assembly in a longitudinal direction toward the die cavity in a manner to draw both pieces of sheet

metal into the die cavity toward said anvil to form a cup-shaped portion with at least one side wall and a bottom wall without shearing any portion of the sheet metal, said drawing of said pieces of sheet metal tending initially to bias said side wall members toward one another;

(d) continuing movement of the punch in said longitudinal direction toward said anvil to compress said bottom wall of said cup-shaped portion of the sheet metal pieces therebetween and thereby extrude said bottom wall in a lateral direction while at the same time permitting said side wall members to move apart without restricting such lateral extrusion, whereby there is formed a laterally enlarged



shape which mechanically interlocks the two pieces of sheet metal,

(i) said lateral extrusion occurring without fracture of any portion of the sheet metal, and

(ii) said side wall members moving apart sufficiently easily to prevent any extrusion in said longitudinal direction;

(e) longitudinally supporting said side wall members independently of said pivot means on a lateral portion of said side wall members remote from said cavity during longitudinal movement of said punch; and

(f) withdrawing the punch from the joined sheet metal assembly.

4,459,736

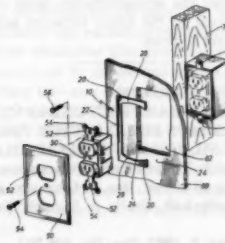
SHIM FOR ELECTRICAL RECEPTACLE OR SWITCH

Milton W. Judkins, 4606 Birch, Bellaire, Tex. 77401

Filed Apr. 26, 1982, Ser. No. 371,563

Int. Cl.³ B23P *19/00*; H02B *1/02*

U.S. Cl. 29—526 R **2 Claims**



1. A shim for adjusting the fit of an electrical receptacle or switch with the surrounding wall surface, comprising:

a thin, generally C-shaped shim of such shape and thickness to fit behind and be concealed by a receptacle cover or switch plate and characterized by,

two diametrically located generally parallel rigid shimming surfaces, said surfaces forming the upper and lower arms of said generally C-shaped shim;

a connecting surface completing said generally C-shaped shim;

an open central portion of said generally C-shaped shim, said open portion being of sufficient size and shape to receive therethrough the main body, including diametrically located mounting screws, of said receptacle or switch, but not of sufficient size and shape to receive therethrough the entirety of said mounting arms when said shim and said receptacle or switch are positioned in substantially parallel alignment; and

the interior edges of said rigid shimming surfaces being concave and including an arcuate surface having a radius of curvature of at least slightly greater than half the distance between the diametrically located mounting screws of said receptacle or switch, so that the shim may be inserted in position after the mounting receptacle or switch is at least partially installed and so that the ends of the rigid shimming surfaces are larger than the central positions thereof to provide a greater bearing surface at the ends.

4,459,737

MACHINE TOOL CONTAINING A MACHINE STAND FOR A WORK SPINDLE, A TOOL MAGAZINE AND A TOOL CHANGER ARRANGED THEREAT

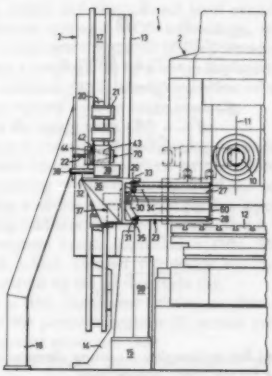
Walter Möri, Kölliken, and Hans Wernli, Oberhasli, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Jan. 19, 1981, Ser. No. 226,199

Claims priority, application Switzerland, Feb. 8, 1980, 1015/80

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 **7 Claims**



1. A machine tool comprising:

a machine stand for a work spindle;

a work spindle mounted on said machine stand;

a tool magazine arranged separate from the machine stand;

a tool changer positioned to cooperate with the tool magazine;

a carriage provided for said tool changer;

said tool changer being mounted on said carriage;

rail means upon which there is movably mounted said carriage;

drive means provided for said carriage for positively driving said carriage along said rail means;

said rail means being fixedly secured to said tool magazine;

an extension element separate from said rail means for extending said rail means and having a length less than the length of the carriage;

said drive means including a drive element arranged exclusively at said rail means and serving to drive the carriage both along said rail means and also along said extension element;

said extension element being mounted on said machine stand and only possessing travelling surfaces for the carriage;

said rail means having opposed ends;

said drive element extending from one end of said rail means to the opposite end of said rail means;

said opposite end of said rail means confronting said extension element;

a drive gear engaging with said drive element;

a drive motor arranged at said carriage and driving said drive gear;

said carriage being movable into an end position located adjacent said work spindle and in which end position a tool located in the work spindle can be exchanged; and

said carriage in said end position being supported upon said extension element and with said drive gear engaging with said drive element located exclusively at said rail means.

4,459,738

SYSTEM FOR EXCHANGING CUTTING TOOLS

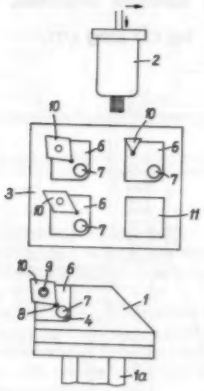
Kurt Buchmann, Essen, Fed. Rep. of Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Aug. 26, 1982, Ser. No. 412,761

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137427

Int. Cl.³ B23Q *3/155*

U.S. Cl. 29—568 **4 Claims**



1. A system for exchanging a cutting element in a machine tool having a rotary shaft, comprising:

(a) a tool holder mounted on the shaft and having a recess including a support surface;

(b) a plurality of generally flat tool heads; each tool head having

(1) a bottom face adapted for a face-to-face contact with said support surface of said tool holder;

(2) a top face being parallel to said bottom face;

(3) a recess provided in said top face and including a support surface extending generally parallel to said bottom and top faces; and

(4) a throughgoing bore spaced from the recess of said tool head and having an axis perpendicular to said bottom and top faces, said throughgoing bore having open ends on said bottom and top faces;

(c) a cutting element disposed in said recess of each said tool head;

(d) first clamping means supported in each said tool head for clamping respective said cutting element against the support surface of the tool head;

(e) second clamping means for removably clamping a selected said tool head against said support surface of said recess of said tool holder;

(f) a magazine positioned spaced from said tool holder and having a plurality of locations each receiving, in a side-by-side arrangement, a separate tool head together with said cutting element attached to said tool head; and

(g) a spreading cylinder means movable in at least three directions transverse to one another and having a spreadable component for introduction into said bore of the selected said tool head in a direction perpendicular to said bottom and top face of the tool head and for grasping said selected tool head by expansion of said spreadable component in said bore of said selected tool head and for transporting said selected tool head from said magazine into said recess of said tool holder and for transporting an earlier-selected tool head from said tool holder to said magazine.

4,459,739

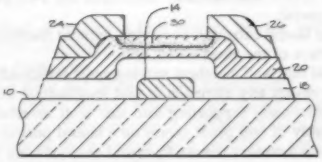
THIN FILM TRANSISTORS

Frank R. Shepherd, Kanata, and William D. Westwood, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 266,630, May 26, 1981, Pat. No. 4,422,090, which is a continuation-in-part of Ser. No. 60,275, Jul. 25, 1979, abandoned. This application Dec. 13, 1982, Ser. No. 449,432

Int. Cl.³ H01L *49/02, 21/38, 21/425, 29/22*

U.S. Cl. 29—571 **12 Claims**



1. A method of fabricating a thin film transistor comprising: depositing upon a substrate:

(i) a semiconductor layer having a zone of enhanced conductivity spaced from respective boundaries of the layer;

(ii) a dielectric layer having surface contact with a first surface of the semiconductor layer;

(iii) first and second conducting regions contacting said semiconductor layer at spaced locations; and

(iv) a third conducting region at one side of the dielectric layer remote from the semiconductor layer coextensive with a part at least of the space between said first and second conducting regions.

4,459,740

METHOD FOR MANUFACTURING VLSI COMPLEMENTARY MOS FIELD EFFECT TRANSISTOR CIRCUITS IN SILICON GATE TECHNOLOGY

Ulrich Schwabe, Munich; Erwin Jacobs, Vaterstetten, and Adolf Scheibe, Ottobrunn, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,717

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133468

Int. Cl.³ H01L *21/22, 29/78, 21/265*

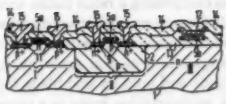
U.S. Cl. 29—576 B **11 Claims**

1. In a method for producing VLSI complementary MOS field effect transistor circuits in silicon gate technology, particularly with switched capacitors of double polysilicon struc-

tures contained in such circuits, in which the process steps for defining the tub for acceptance of the n- or, respectively, the p-channel transistors, for forming the field and channel implantations for active MOS regions of said circuits, as well as for the forming of field oxide regions and the gate oxide and the deposition and etching of the polysilicon-1 level for formation of gate regions and capacitance structures occur in a known manner, wherein the improvement comprises a sequence of the following steps:

(a) thermally oxidizing the entire surface to such a degree that an oxide layer thickness, d_4, over the polysilicon structures (5*a*, 5*b*) corresponds to a desired thickness of an insulating layer for the capacitance structures, whereby at the same time, the oxide layer thickness, d_3, over the source/drain regions (11) is determined, such regions not being masked in an ion implantation (10) occuring later for forming the source/drain regions of the p-channel transistors (11);

(b) depositing a surface-wide silicon nitride layer (7) masking the source/drain regions (11) of the p-channel transistors in a layer thickness matched to the implantation energy level utilized in a subsequent source/drain implantation (8);



(c) etching the silicon nitride layer (7*a*, 7*b*) in such a manner that regions of the p-channel transistors (11) as well as the polysilicon structures (5*b*) provided for capacitances remained covered by the etched silicon nitride layer;

(d) implanting ions non-selectively for forming the source/-drain regions (9) of the n-channel transistors;

(e) thermally oxidizing the entire surface to such a degree that the oxide layer thickness, d_6, over the surface/drain regions of the n-channel transistors is sufficient as a masking layer for a subsequent implantation (10) utilized for generating the source/drain regions (11) of the p-channel transistors;

(f) removing the nitride layer structures (7*a*, 7*b*);

(g) implanting ions non-selectively for forming the source/-drain regions (11) of the p-channel transistors;

(h) depositing and etching a polysilicon-2 level (12) for the capacitance structures; and

(i) forming an insulating layer (14), contact hole regions and metal interconnect level (15) in a known manner.

4,459,741

METHOD FOR PRODUCING VLSI COMPLEMENTARY MOS FIELD EFFECT TRANSISTOR CIRCUITS

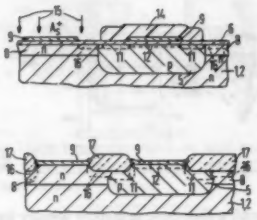
Ulrich Schwabe, Munich, and Erwin Jacobs, Vaterstetten, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 17, 1982, Ser. No. 408,788

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133841

Int. Cl.[3] **H07L** *21/22, 29/78, 21/265*

U.S. Cl. 29—576 B **8 Claims**



1. In a method of producing VLSI complementary MOS field effect transistor circuits (CMOS circuits) during which p- or n-doped troughs are formed in a semiconductor substrate for acceptance of n- or p-channel transistors of the circuits, said troughs having corresponding doping element atoms introduced therein by multiple ion implantation for defining different transistor threshold voltages and masking for the individual ion implantation occurs by structures composed of a material selected from a group consisting of photoresist, silicon oxide and silicon nitride, and in which the production of source/drain and gate regions as well as formation of intermediate and insulating oxides and interconnect level occurs in accordance with known steps of MOS technology, wherein the improvement comprises a sequence of the following steps:

(a) producing a p-trough (5) by a boron implantation (4) in a n-doped substrate (1, 2) after completion of masking of remaining regions with an oxide mask (3);

(b) stripping the oxide mask (3);

(c) producing a n-trough (8) and doping the p-channel by a surface-wide implantation (7) of an ion selected from a group consisting of phosphorus, arsenic and antimony;

(d) depositing a silicon nitride layer (9) in a layer thickness and etching said layer in such a manner that it is matched to a subsequent boron implantation (10*a*, 10*b*) so that regions in which channel transistors are later formed remain covered by the nitride layer (9);

(e) forming a first photoresist process so that all regions outside of the p-trough regions (5) remain covered with first photoresist structures (13);

(f) conducting a double boron implantation process (10*a*, 10*b*) whereby a first boron implatation (10*a*) is carried at a relatively low energy level for doping the field regions (11), said first implantation being masked by said silicon nitride layer (9) and a second boron implantation (10*b*) is carried out at a relatively higher energy level for doping the n-channel (12), said second implantation not being masked by said silicon nitride layer (9);

(g) forming a second photoresist process after removal of said first photoresist structures (13) so that all regions outside of the n-trough regions (8) remain covered with second photoresist structures (14);

(h) forming an arsenic implantation (15) for doping field regions (16) of the p-channel transistors;

(i) stripping the second photoresist structures (14);

(k) forming field oxide regions (17) by topical oxidation with employment of the silicon nitride layer (9) as masking; and

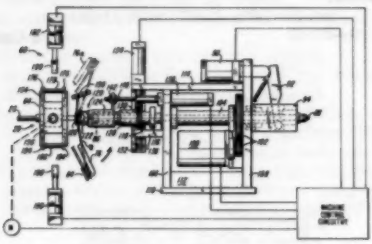
(l) stripping the silicon nitride mask (9).

4,459,742

ARMATURE WINDING MACHINE AND METHOD

Alvin C. Banner, Kettering, Ohio, assignor to The Globe Tool & Engineering Company, Dayton, Ohio

Filed Apr. 15, 1982, Ser. No. 368,888
Int. Cl.³ H02K 15/09
U.S. Cl. 29—597 8 Claims



1. For use with a flier-type armature winder having a rotatable flier, a commutator shield assembly including an inner shield having a notch for exposing a commutator hook to enable connection of coil lead wires to said hook and an outer shield that assists in looping a lead wire about said hook and in preventing wire from engaging a hook during intervals in which said flier is rotating, the improved method comprising the steps of:

(1) rotating the inner shield to position said notch out of the path of the wire followed when a coil is being wound;

(2) rotating said flier to wind a coil, moving the outer shield to remove it from said path so that the wire used in winding the coil will be drawn deeper into the coil receiving slots as the flier rotates;

(3) rotating said inner shield to position said notch in a location wherein it exposes a commutator hook in said path so that said wire may be engaged with said hook by rotating said flier after said coil is wound; and

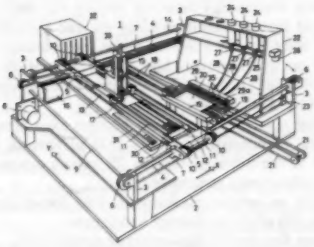
(4) extending said outer shield toward said coil into covering relation to said notch.

4,459,743

AUTOMATIC MOUNTING APPARATUS FOR CHIP COMPONENTS

Yoshitsugu Watanabe, Tanashi, and Katsutoshi Koenuma, Higashimurayama, both of Japan, assignors to J. Osawa Camera Sales Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 326,846
Claims priority, application Japan, Dec. 5, 1980, 55-170825; Dec. 5, 1980, 55-173762[U]; Dec. 10, 1980, 55-176116[U]; Dec. 10, 1980, 55-176117[U]; Apr. 30, 1981, 55-61576[U]
Int. Cl.³ H05K 3/30
U.S. Cl. 29—740 14 Claims



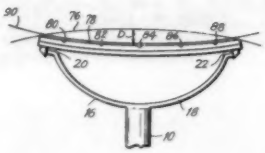
1. An automatic mounting apparatus for mounting chip components on a printed circuit board, comprising a parts feeder including a plurality of exchangable parts hoppers which contain therein said chip components, a parts nest having a plurality of parts receivers connected through guide means to said hoppers for storing said chip components fed from said parts feeder in preparation for picking-up, a parts applicator including means for picking up said chip component and movable in orthogonal directions toward said parts receivers in programmed sequence, and means for transporting said printed circuit board to a position in proximity of said parts nest, said parts applicator being controlled in movement so that the chip components picked up from said parts receiver are moved to a predetermined position on said printed circuit board, and a common support frame for said parts feeder and said parts nest turnable about an axis from upright to fallen positions to remove the remaining chip components in said parts hoppers.

4,459,744

RAZOR BLADE APPARATUS AND METHOD

Miguel H. Esnard, Asheville, N.C., assignor to Alan K. Roberts, Roslyn Heights, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,575
Int. Cl.³ B26B 21/16, 21/56
U.S. Cl. 30—49 12 Claims



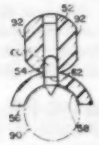
1. Apparatus comprising a razor blade, means for supporting said razor blade for movement between and selective operation in concave and convex configurations, said means including a handle for manipulation of said razor blade, and a cartridge housing said blade and holding said blade flexed in one of said configurations, said cartridge being in a corresponding configuration, wherein said razor blade having a longitudinal axis and being provided with at least one opening elongated in correspondence with said longitudinal axis, said cartridge including a pin displaceable in said opening as said blade is flexed between said configurations.

4,459,745

CABLE SPLITTER

Walter Britton, 4713 Acorn Dr. North, Lakeland, Fla. 33802

Continuation-in-part of Ser. No. 271,942, Jun. 9, 1981, abandoned. This application Apr. 14, 1982, Ser. No. 368,272
Int. Cl.³ B21F 13/00
U.S. Cl. 30—90.4 15 Claims



1. A cable splitter for cutting the outside sheath of an electrical cable comprising combination:

a first elongated member;

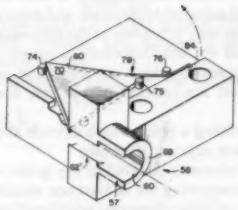
a first trough located along the longitudinal length of said first elongated member;
a second elongated member;
a second trough located along the longitudinal length of said second elongated member;
a beading strip disposed along the longitudinal length of said second elongated member;
said beading strip removably cooperating with said first trough for removably securing said elongated members together;
a transverse channel extending through said first and said second elongated members and said beading strip;
a cutting element adjustably located within said transverse channel; and
a cutting means of said cutting element disposed within said second trough for cutting the outside sheath of said electrical cable.

4,459,746

TOOL FOR CLEANING THE EXPOSED END OF AN OPTICAL FIBER

Jack E. Goodman, Gaithersburg, Md., assignor to Optelecom, Incorporated, Gaithersburg, Md.

Filed Mar. 3, 1982, Ser. No. 354,181
Int. Cl.³ B25F *3/00*; B26B *1/00, 3/00, 11/00*
U.S. Cl. 30—124 **6 Claims**



1. A tool for cleaving the exposed end of the optical fiber of an optical cable at the end of a terminal having an end face transverse to the longitudinal axis of the optical cable and secured to the optical cable, comprising a rotatable housing; a terminal receiving receptacle in said housing; a generally flat polygonal glass scribing element defining corner scribing edge; means floatingly mounting said scribing element to said housing and spring means urging said scribing element into a inoperative relationship to the optical cable; said scribing element urged against the urging of the spring means by the end face of the terminal when said terminal is fully received in the terminal receiving receptacle in said housing to an operative scribing relationship to the fiber.

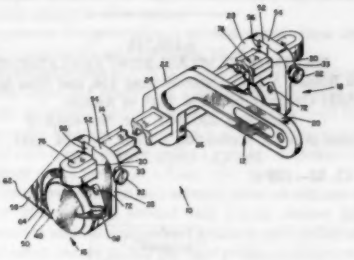
4,459,747

MANUAL ADJUSTABLE DUAL CUTTING DEVICE

Fred J. Salem, and Geraldine Salem, both of 907 Brandywine Cir., Atlanta, Ga. 30338

Filed Oct. 28, 1982, Ser. No. 437,580
Int. Cl.³ B26B *25/00*
U.S. Cl. 30—307 **4 Claims**

1. A manual cutting device comprising:
an elongate track member;
at least two cutting blade housing members slidably attached to said track member;
a circular rotatable cutting blade rotatably mounted on each of said housing members at a position spaced from said track member and substantially perpendicular thereto;
means for selectively preventing sliding movement of each of said housing members;
an elongate handle member attached to said track member, said handle member being substantially parallel to said cutting blade; and



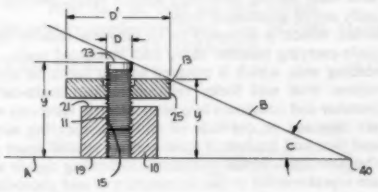
said cutting blade being mounted on said housing member such that only a portion of said cutting blade extends beyond said housing member.

4,459,748

Y-GAUGE ANGLE MEASURING DEVICE

Barney L. Byrum, 215 5th Ave. Dr. East, Bradenton, Fla. 33508

Filed Dec. 2, 1982, Ser. No. 446,237
Int. Cl.³ G01B *3/56, 5/24*
U.S. Cl. 33—1 N **11 Claims**



1. Apparatus for measuring an acute dihedral angle formed between first and second planes, said apparatus comprising:
a base member having a first bore defined therein through at least one surface of said base member, said bore having a central longitudinally-extending axis about which said bore is internally threaded, said base member including means for positioning said base member in a deployed position on said first plane wherein said one surface faces generally away from said first plane and said longitudinal axis extends perpendicular to said first plane;
a generally cylindrical screw member having a shaft portion with a diameter D and which is peripherally threaded to threadedly engage said first bore in coaxial orientation with said central axis to permit said screw member to be selectively extended from and retracted into said base member by mutual rotation between said screw member and said base member;
an annular collar member having a peripheral diameter D' and an internally threaded second bore defined therethrough, said second bore being threaded for threadedly engaging said screw member in coaxial relation with said central axis to permit said collar member to be axially translated along said screw member by mutual rotation between said collar member and said screw member;
whereby measurement of said acute angle is effected with said base member in said deployed position and said screw member rotated with respect to said base member and said collar member rotated with respect to said screw member until the radial peripheries of said screw member and said collar member contact said second plane, whereupon the tangent of the measured acute angle is represented by

$(y'-y)/(D'-D)(\frac{1}{4})$, where y' and y are the distances from the first plane to the points of contact at said second plane by the screw member and collar member, respectively.

4,459,749

HAND-HELD MEASURING IMPLEMENT

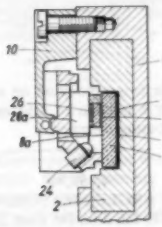
Heinz Rieder, A-5121 Ostermiething 154, and Max Schwaiger, A-5121 Ostermiething 298, both of Austria

Filed Aug. 23, 1982, Ser. No. 410,618

Claims priority, application Austria, Sep. 14, 1981, 3951/81

Int. Cl.³ G01B *7/02, 11/02*

U.S. Cl. 33—125 C **12 Claims**



1. In a hand-held measuring implement comprising

a transparent scale-carrying member provided with a graduated scale having uniformly spaced apart, parallel, optically active graduation lines,

a feeler, which is mounted to be movable relative to said scale-carrying member along said graduated scale,

a reading unit, which is coupled to said feeler to move in unison with said feeler relative to said scale-carrying member and comprises two photoelectric receivers which are disposed on one side of said scale-carrying member and face said graduated scale and are spaced apart along the same and adapted to generate indicating signals which are representative of the illumination of said photoelectric receivers, two line screens, each of which is disposed between one of said photoelectric receivers and said graduated scale and has parallel, optically active lines which are parallel to said graduation lines, and two light sources, each of which is associated with one of said photoelectric receivers and operable to illuminate the same through said graduated scale and one of said line screens, whereby said photoelectric receivers are adapted generate two cyclically changing indicating signals in response to the illumination by said light sources as said reading unit is moved along said graduated scale, said photoelectric receivers having such a spacing along said graduated scales that said cyclically changing indicating signals are displaced in phase,

signal-processing circuitry for receiving and processing said cyclically changing indicating signals to generate processed indicating signals,

a display device for receiving said processed signals and generating a display in response to said processed indicating signals, and

power supply means for supplying electric power to said light sources, said signal-processing circuitry and said display device,

the improvement residing in that

said scale-carrying member has a first elongated surface, which faces said line screens and is provided with said graduated scale, a second elongated surface, which extends along said graduated scale and is free from said graduated lines, and a third elongated surface which extends along said graduated scale and faces away from said line screens,

a reflector is provided which has a reflective surface, which adjoins said third elongated surface and faces said first and second elongated surfaces, and

said light sources are arranged to emit light which is incident on said scale-carrying member on said second elongated surface and is subsequently reflected by said reflecting surface through said graduated scale and said line screens onto said photoelectric receivers.

4,459,750

REFERENCE MARK SELECTION ARRANGEMENT FOR MEASURING INSTRUMENT

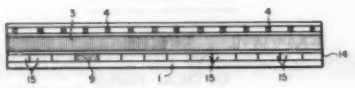
Alfred Affa, Stein, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jan. 20, 1983, Ser. No. 459,378

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3204012

Int. Cl.³ G01B *11/02*; H01J *3/14*

U.S. Cl. 33—125 C **18 Claims**



1. In a measuring instrument of the type comprising a measuring scale which extends along a measuring direction and defines a measuring direction and plurality of reference marks, a scanning unit which includes means for detecting the reference marks and means for detecting at least one selector element positioned adjacent to the scale, and means for generating a reference pulse only when one of the reference marks and the selector element are simultaneously detected, such that only those reference marks which are associated with one of the selector elements are brought into action, the improvement comprising:

means for defining a guide which extends along the measuring direction adjacent the scale;

a column of elements coupled to the guide, said column of elements comprising the at least one selector element and a plurality of filler elements, positioned end to end, said guide, selector element, and filler elements shaped such that the column of elements is slideable along the guide yet is prevented from moving laterally out of contact with the guide;

and

holding elements positioned at two spaced locations of the guide, said holding elements movable between a first position, in which the column of elements is slideable along the guide, and a second position, in which the end elements in the column of elements are prevented from moving longitudinally past the holding elements;

said column of elements being of a length selected completely to fill the length of the guide between the holding elements in order to hold the at least one selector element in position, aligned with a selected one of the reference marks.

4,459,751

SELECTION ELEMENT HOUSING FOR INCREMENTAL MEASURING APPARATUS

Guenther Nelle, Bergen, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,624

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1982, 3245357

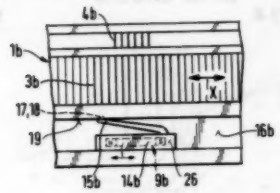
Int. Cl.³ H01J *3/14*

U.S. Cl. 33—125 C **12 Claims**

1. In an incremental measuring apparatus of the type comprising a graduation; a plurality of reference marks positioned at predetermined locations with respect to the graduation; a scanning unit for generating a reference signal in response to the reference marks; at least one selection element positioned

adjacent to a selected one of the reference marks; and means, movable with the scanning unit, for detecting the selection element and for gating the reference signal in response to the detection of the selection element, the improvement comprising:

a guide defined by the measuring apparatus extending alongside the graduation; and



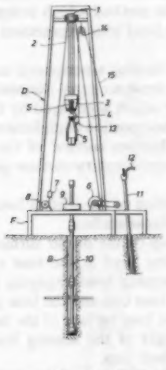
a housing which encases the selection element, said housing comprising at least one clamping element configured to clamp the housing securely in position in the guide, said clamping element comprising a spring arm extending from the housing and a projection at a free end of the spring arm, said projection positioned to engage the guide to secure the housing in place in the guide.

4,459,752

PRECISION TUBULAR LENGTH MEASURING SYSTEM

H. Duane Babcock, Houston, Tex., assignor to Babcock Consultants, Inc., Houston, Tex.

Filed Sep. 27, 1982, Ser. No. 425,010
Int. Cl.³ G01B 7/04
U.S. Cl. 33—134 R **14 Claims**



4. Apparatus for measuring the length of tubular goods in a well bore and adapted for use with a well derrick and associated equipment including a crown block, drilling line and drawworks and a traveling block having an associated lifting means such as a traveling hook or elevator, the measuring apparatus comprising,

measurement wheel means having a wheel and means for generating electrical pulses to the amount of angular shaft rotation of said wheel means,

a crown sheave pulley,

measure wire means independent and separate from the drilling line secured to the traveling block lifting means and running about the crown sheave pulley to the measurement wheel means, the crown sheave pulley arranged so that the measure wire means secured to the traveling block lifting means is substantially parallel to the tubular goods being supported by the traveling block lifting means, the measure wire means arranged to engage the measurement wheel means and to turn the wheel in proportion to the linear movement of said traveling block lifting means,

tension means for establishing tension in the independent and separate measure wire means,

sensing means for generating a tension signal when tubular load is carried by said traveling block,

counter means responsive to said electrical pulses and to said tension signal for generating a signal representative of the length of tubular goods extending within the well bore,

wherein said measure wire means is a continuous loop wire about said crown sheave pulley, a pulley disposed on the rig floor and a pulley at a fixed third point,

said wire extending from said secured point on said traveling block lifting means around said crown sheave pulley, thence via said measure wheel means to said pulley at the third point, thence to said rig floor pulley, and back to said secured point,

said wire bearing substantially tangentially to said measure wheel means, and

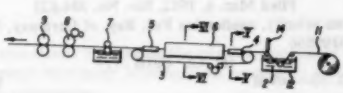
wherein said tension means is a spring between the axle of one of the three pulleys and a fixed point.

4,459,753

SELF-STRAIGHTENING TAPE MEASURE OF SYNTHETIC RESIN AND A PROCESS FOR PREPARING THE SAME

Takashi Nagasawa, Kusatsu, and Junichi Shimura, Ikoma, both of Japan, assignors to Sekisui Jushi Kabushiki Kaisha, Osaka, Japan

Filed Aug. 14, 1981, Ser. No. 292,938
Claims priority, application Japan, Aug. 14, 1980, 55-112202
Int. Cl.³ G01B 3/10
U.S. Cl. 33—137 L **1 Claim**



1. A method for manufacturing a self-straightening tape measure of synthetic resin, which comprises impregnating a tape material prepared by crossing fibers with a thermosetting resin in an unhardened state, placing thus impregnated material between a pair of endless belts so that the impregnated material is surrounded by the belts while being further processed, bending the material together with the belts in the width direction thereof to form an arc in cross-section while the belts are being moved in the longitudinal direction thereof, adjusting a curvature of the arc so that the arc may occupy from one-third to three-fourths of the whole circumference of the circle described by extending the arc, heating the tape to harden the resin and give the impregnated material this curvature and thereafter removing the tape from the belts to obtain a self-straightening tape measure.

4,459,754

METHOD AND APPARATUS FOR MEASURING INTERIOR SHEAVE GROOVE DIMENSIONS

Kentaro Yasuda, Southington; Albert J. Saxer, Avon, and Janis J. Cilderman, Simsbury, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

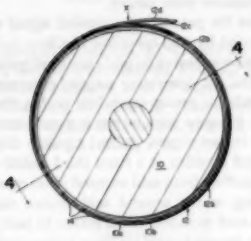
Filed Jun. 23, 1982, Ser. No. 391,194
Int. Cl.³ G01B 3/10
U.S. Cl. 33—137 R **4 Claims**

1. A device for measuring a groove dimension in a grooved sheave, characterized by:

a length of thin tape which contains graduations along its length; and

spacers which are spaced apart along one surface of the tape

for supporting the tape in the groove, each spacer having a cross-sectional contour which is congruous with the



groove at a certain predetermined groove depth at which the measurement is to be made.

4,459,755

MEASURING DEVICE

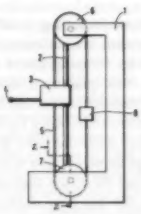
Siegfried Gruhler, Vöhringen, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Mar. 4, 1982, Ser. No. 354,622

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1981, 3109856

Int. Cl.³ F01B 5/14

U.S. Cl. 33—169 R 8 Claims



1. A height measuring device comprising a frame, a slide mounted on said frame for vertical movement therealong, a measuring member rigidly connected to said slide and being displaceable with said slide on said frame, a motor for driving said slide and a constant slip torque clutch connected between said motor and said slide to drive said slide to a measuring position in which said measuring member exerts a constant measuring force on a measuring point, said constant slip torque clutch comprising a magnetic field clutch for producing constant torque, said magnetic field clutch including an adjusting ring, said ring being adjustable to vary the slip torque of the magnetic field clutch and thus the effective measuring force and including a magnetic switch for clamping said adjusting ring, said magnetic clutch including a permanent magnet part and a counterpart driven by said permanent magnet part and a crank contact head located adjacent said permanent magnet part for determining the angular displacement between it and said adjusting ring.

4,459,756

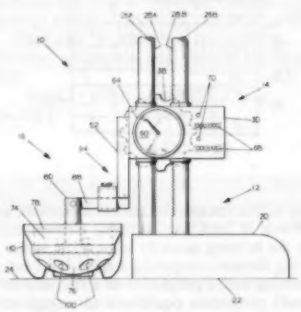
APPARATUS AND METHOD FOR MEASURING THE EFFECTIVE SUPPORT HEIGHT OF A CONTAINER BASE CUP

Frank J. Patek, Whitehouse, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 1, 1982, Ser. No. 394,366

Int. Cl.³ G01B 5/02

U.S. Cl. 33—172 R 5 Claims



1. In the determination of the overall height of a container package comprising a container having a side wall and a convex bottom surface and a base cup having a side wall engaging the side wall of the container and a base wall having a base surface complementary to and engaging a portion of the convex bottom surface of the container such that the overall height of the container package is determined by the engagement of the side walls and the base wall surfaces of the base cup and the container, the method which comprises

bringing a sensing head into engagement with a planar surface,

said sensing head having a peripheral edge portion corresponding to the cross sectional dimension of the side wall of the container which is engaged by the side wall of the base cup and a base portion complementary to the portion of the convex bottom surface of the container which engages the complementary surface on the base wall of the cup,

measuring the position of the sensing head when in engagement with the planar surface,

placing the base cup on the planar surface,

inserting the sensing head in the base cup with the edge portion of the sensing head engaging the interior of the side wall of the base cup and the base portion of the base cup engaging the base surface of the base cup,

measuring the height of the sensing head in the inserted position in said base cup,

and determining the difference between the two measurements such that the addition of the difference to the overall height of the container determines the overall height of the container.

4,459,757

ADJUSTABLE CALIBER ROD

Werner Lippuner, and Ulrich Müller, both of Balgach, Switzerland, assignors to Wild Heerbrugg Aktiengesellschaft, Switzerland

Filed Jun. 4, 1983, Ser. No. 504,176

Claims priority, application Switzerland, Jul. 13, 1982, 4270/82

Int. Cl.³ G01C 21/00; F41G 1/54

U.S. Cl. 33—234 6 Claims

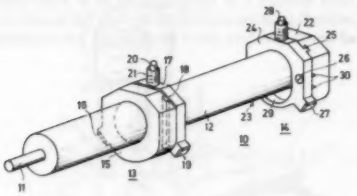
1. An adjustable caliber rod apparatus insertable into a weapon barrel bore for providing mounting means on the barrel bore axis, comprising:

an elongated body;

first and second three-point support assemblies mounted on said body at longitudinally spaced locations for supporting said body in axis-parallel relationship within said bore, each of said support assemblies comprising

a first support leg,

a second support leg,



a third radially extendable support leg, spring means for urging said third leg radially away from said body, and a mounting for said third leg and said spring, and

means for adjustably coupling said support legs to said body in angularly separated relationship to provide a triangular support for said body within the bore with at least said third leg, said spring and said mounting being radially adjustable relative to said body.

4,459,758

TOPOGRAPHICAL SURVEYING INSTRUMENT

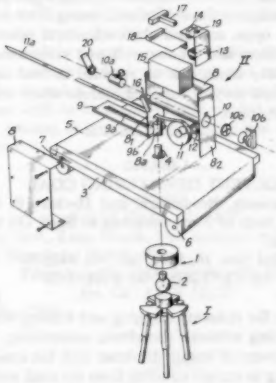
Pascal Halle, St. Juery, France, assignor to Sarl: Infomain, Vals Les Bains, France

Filed Apr. 6, 1982, Ser. No. 365,915

Claims priority, application France, Apr. 7, 1981, 81 06912

Int. Cl.³ G01B *3/10, 11/00*

U.S. Cl. 33—274 **16 Claims**



1. Apparatus for providing topographical surveys, comprising:

a tracing table having a generally planar surface;

a sight, survey, and plotting device having a frame;

means for rotatably mounting said sight, survey, and plotting device to said tracing table about an axis of rotation perpendicular to the generally planar surface of the tracing table;

means mounted to said frame for providing a light beam in a direction generally perpendicular to said axis;

a winding drum;

means for mounting said winding drum to said frame;

a supple measuring tape associated with said winding drum and unwindable parallel to the direction of said beam and perpendicular to said axis of rotation;

a plotting and tracing ruler having a slot and a graduated reduction scale proximate said slot defining a longitudinal median axis; and

means for mounting said plotting and tracing ruler to said frame such that said longitudinal median axis is perpendicular to said axis of rotation and extends over the tracing table in a direction parallel to the direction of said light beam.

4,459,759

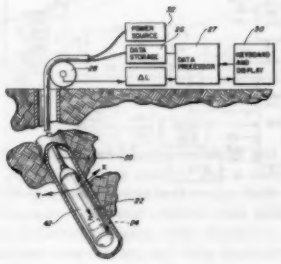
ANGULAR RATE AND POSITION TRANSDUCER FOR BOREHOLE SURVEY INSTRUMENT

Rand H. Hulsing, II, Redmond, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Aug. 4, 1982, Ser. No. 405,030

Int. Cl.³ E21B *47/022*

U.S. Cl. 33—304 **14 Claims**



1. A transducer for sensing the angular position of a borehole survey instrument housing with respect to a reference position, comprising:

a rotor;

a stator secured to the housing;

means for magnetically suspending the rotor within the stator whereby the rotor is constrained to rotate about a single axis relative to the stator;

means for sensing movement of the rotor about the axis of rotation to develop an indication of the angular position of the housing, the sensing means including a plurality of markings disposed on a face of the rotor and means for optically sensing the markings on the rotor, the optical sensing means comprising a light-emitting diode for illuminating a portion of the markings, a photodetector for sensing an illuminated marking and a second photodetector mounted on the stator with the light-emitting diode and the first photodetector and having a field of view displaced from the field of view of the first photodetector by one-half the width of a marking, the photodetectors generating a pulse when a marking is in its field of view; and

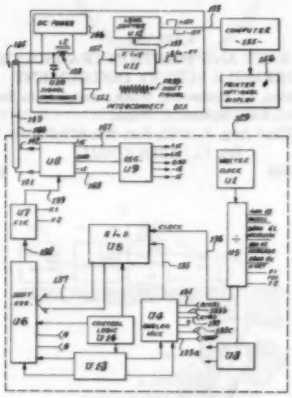
means for detecting the output of the photodetectors to develop an output signal representing the angular position of the housing relative to the reference position including means for gating the pulses from the photodetectors to develop clock pulses, means for counting the clock pulses to develop the output signal, and means for developing a control signal representing the direction of rotation of the rotor relative to the stator, wherein the clock pulse counting means includes a control input coupled to the control signal developing means causing the clock pulse counting means to increment and decrement the output signal in response to the control signal.

4,459,760

APPARATUS AND METHOD TO COMMUNICATE INFORMATION IN A BOREHOLE

Fred L. Watson, Templeton, and Donald H. Van Steenwyk, San Marino, both of Calif., assignors to Applied Technologies Associates, San Marino, Calif.

Filed Feb. 24, 1982, Ser. No. 351,743
Int. Cl.³ E21B 47/022
U.S. Cl. 33—312 9 Claims



1. In apparatus used in borehole mapping or surveying and including instrumentation for the determination of borehole azimuth and/or tilt, the combination comprising

(a) means for suspending said instrumentation in the borehole,

(b) said instrumentation operating to generate analog signals in the borehole,

(c) means responsive to reception of said signals for multiplexing said signals and converting same to digital signals, in the borehole,

(d) means responsive to reception of said digital signals for converting said digital signals to digital words,

(e) FSK means in the borehole connected to receive said words and produce signal versions thereof at an FSK signal level,

(f) a two conductor wireline in the borehole connected to transmit DC voltage downwardly to said instrumentation and to transmit versions of said digital words upwardly in the borehole,

(g) a mixer stage in the borehole connected to superimpose said FSK signal versions onto the DC wireline voltage for said transmission upwardly in the borehole,

(h) means for stripping said signal versions off the wireline at an upper elevation and processing said signal versions to a form usable in determination of borehole azimuth and/or tilt at the level of said instrumentation in the borehole,

(i) means supplying DC power on said wireline downwardly in the borehole to said instrumentation via a sub-surface power supply regulator,

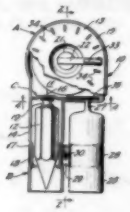
(j) said sub-paragraph (g) mixer stage and said sub-paragraph (h) means including inductors operating to pass said DC power but blocking said FSK signal versions from passing into said sub-paragraph (i) power supply means and into said sub-surface power supply regulator.

4,459,761

RETRACTABLE PLUMB AND CHALK LINE

John J. Bosco, West Nyack, N.Y. 10994

Filed Jan. 10, 1983, Ser. No. 457,052
Int. Cl.³ B44D 3/38; G01C 15/10
U.S. Cl. 33—414 13 Claims



1. In combination, a casing, a reel mounted for rotation within said casing and externally accessible crank means for actuating said reel, said casing being characterized by a generally tubular open-ended wall on an axis substantially tangential to said reel, a plumb bob sized for reception via the open end of said tubular wall, a chalk line wound upon said reel and connected at its free end to said plumb bob, and selectively operable brake means for retaining a selected wound-line position of said reel in said casing; said casing having a chalk-admission opening for receipt of chalk powder, and including an inner wall member substantially closing the inner end of said tubular wall, said inner wall member having a limited generally central aperture through which line from said reel passes to said plumb bob, whereby chalk powder within said casing and on the inner side of said inner wall may be substantially confined for exposure to line within said casing; said chalk-admission opening being on the side of said casing from which said tubular wall is open, and said chalk-admission opening being laterally offset from said tubular wall, and valve means at said opening, whereby chalk can be retained in said casing and further such chalk may be supplied thereto when said tubular wall is upwardly open.

4,459,762

SOLVENT DEWATERING COAL

Donald E. Hardesty, Brookshire, and Herbert F. Buchholz, Sugar Land, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 18, 1982, Ser. No. 442,559
Int. Cl.³ F26B 3/00; C10L 5/00
U.S. Cl. 34—9 14 Claims

6. A process for reducing slagging and fouling behavior of coal by extracting minerals therefrom, comprising, mixing a nonaqueous solvent of tetrahydrofuran with the coal, the solvent functioning to extract minerals from the coal, and separating the solvent and minerals from the coal.

4,459,763

TRAY DRYING CHAMBER

Dietrich Meissner, Berlin, and Heinz Geisenhof, Weissenberg, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,294
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1981, 3109458
Int. Cl.³ F26B 9/06
U.S. Cl. 34—75 17 Claims

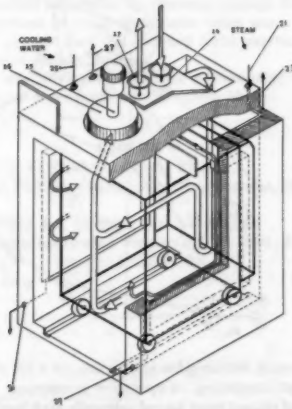
1. A tray-truck drying chamber for drying moist material therein comprising:

a drying chamber having the inner surface adapted for being temperature controlled, with at least one inner surface

comprising means for being heated and at least one inner surface comprising means for being cooled;

fan impeller means mounted within the ceiling of the drying chamber for causing circulation of a gaseous fluid within the drying chamber; and

a removable tray-truck having means for being positioned within the drying chamber when drying of materials on the tray-truck is to be conducted in a manner such that circulation of the gaseous fluid dries material thereon, and constructed in a rectangular form, said tray-truck having



a closed rear wall having a slot opening at the bottom, and a wall arranged in front of and spaced from the rear wall, and having openings arranged therethrough in a manner such as to cause uniform distribution of the gaseous fluid within the drying chamber;

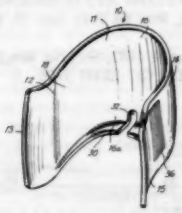
said gaseous fluid passes in contact with at least one of said heated surfaces before contacting said material on the tray-truck and a portion of the gaseous fluid passes in contact with at least one of said cooled surfaces before again passing in contact with at least one of said heated surfaces.

4,459,764

SHOE HEEL GUARD

Michael S. Beck, Lake Worth, Fla., assignor to Security Comfort Co. Inc., Lake Worth, Fla.

Filed Apr. 13, 1983, Ser. No. 484,664
Int. Cl.³ A43B *13/22*
U.S. Cl. 36—72 B **14 Claims**



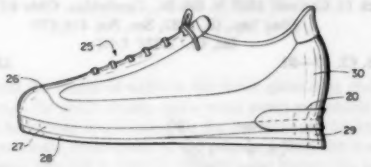
1. A shoe heel guard for protecting the back and heel portions of a shoe on a foot of a driver of a vehicle comprising a frame having a generally U-shaped configuration in cross-section, said frame being sized to provide an interference fit on the back of said shoe when engaged therewith, said frame having a rounded rear portion including a substantially vertical wall portion and opposing side portions defining an open area therebetween in which said back of said shoe is engagably inserted, said frame having a lower peripheral edge which extends inwardly from the bottom of said rounded rear portion against which the bottom surface of the heel of said shoe is engaged, said lower peripheral edge having a slot formed therein which extends partially into said rounded substantially vertical wall portion of said frame to enhance the interference fit of the guard with the shoe.

4,459,765

HEEL-COUNTER STABILIZER

Roy J. Power, Berwyn, Pa., assignor to Power-Soler, Inc., Wetumpka, Ala.

Filed Sep. 29, 1981, Ser. No. 306,711
Int. Cl.³ A43B *5/00, 23/17*
U.S. Cl. 36—88 **7 Claims**



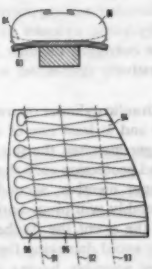
1. In combination, a heel-counter stabilizer and an athletic shoe having an outer sole, a counter and a composite heel member including a midsole and heel wedge both of resilient material and separate from said counter; said stabilizer comprising a heat-deformable plastic strip displaying substantial rigidity at ambient temperature, said strip encircling the back of said counter and said heel member and terminating at the broadest part thereof, the bottom edge of said stabilizer being above the top of said outer sole, and adhesively bonded to the lower margin of said counter and to the upper part of said heel member.

4,459,766

CROSS-COUNTRY SKI SHOE

Josef Linecker, Rosengasse 5, Mattighofen, A-5230, Austria

Division of Ser. No. 892,770, Apr. 3, 1978, Pat. No. 4,392,313, which is a division of Ser. No. 122,698, Feb. 19, 1980, Pat. No. 4,235,452. This application Aug. 5, 1982, Ser. No. 405,389
Claims priority, application Austria, Feb. 9, 1978, 924/78
Int. Cl.³ A43B *5/04, 13/00*
U.S. Cl. 36—117 **6 Claims**



1. A light ski shoe for use with a cross-country ski, comprising a flexible sole means extending in a longitudinal direction and having a region accommodating the ball of the foot of a wearer of the ski shoe, the sole means having lateral edges and a portion extending therebetween and adapted to be partly in

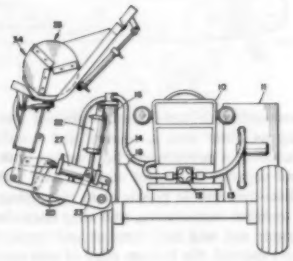
registry with an underlying ski having lateral edges spaced inwardly from, and extending in the direction of, the lateral edges of the sole means, and the sole means portion including transverse strips of a rigid but thin sheet material arranged solely on one side of the sole means and solely in said region and being separated from each other in said direction by transverse grooves.

4,459,767

DITCHER HEAD ASSEMBLY FOR CLEANING DITCHES

Jack O. Cartner, 1005 N. 8th St., Cambridge, Ohio 43725

Filed Sep. 10, 1982, Ser. No. 416,579
Int. Cl.³ E02F *5/04*
U.S. Cl. 37—81 **13 Claims**



1. A ditcher combination comprising a tractor and ditcher assembly adapted to clean earth and debris from a ditch along the berm of a highway, comprising:

A. a tractor having a hydraulically powered take-off and a reservoir therefor;

B. a support stand pivotally connected to said tractor for rotation about a vertical axis;

C. a first outrigger member pivotally connected to the support stand and extending outwardly therefrom;

D. a first elevating hydraulic cylinder pivotally connected between the support stand and said first outrigger member;

E. a second outrigger arm pivotally connected to the first outrigger member and supporting a ditcher assembly;

F. a second hydraulic cylinder extending generally parallel to said first outrigger member and attached thereto and being operatively connected with the second outrigger arm;

G. a third hydraulic cylinder operatively connected between the tractor and at least one of the support stand and the first outrigger member, the third hydraulic cylinder having overload protection such that the entire support stand, first outrigger member, second outrigger arm, and the ditcher assembly will pivot horizontally about said vertical axis in the event the ditcher assembly meets an obstruction to avoid damaging the ditcher assembly;

H. the ditcher assembly having a ditcher head, a ditcher housing at least partially surrounding said head, and a ditcher arm operatively connecting the ditcher head with the second outrigger arm;

I. a ditcher plate at least partially in said ditcher housing secured to a shaft and driven by a hydraulic motor; and

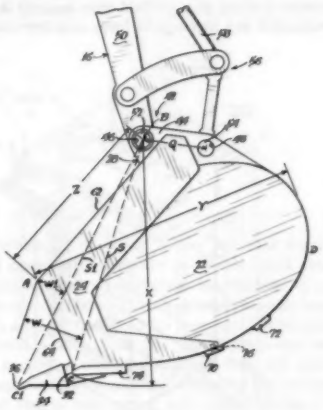
J. paddle supports being attached to said ditcher plate.

4,459,768

BUCKET DESIGN

Allan J. Albrecht, Rothschild, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Jan. 31, 1983, Ser. No. 462,623
Int. Cl.³ E02F *3/28*
U.S. Cl. 37—118 R **7 Claims**



1. An earth working bucket for use on a lift arm assembly, the bucket comprising an operative association:

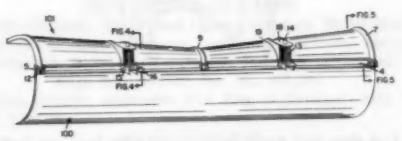
a pair of spaced apart lateral sidewalls each having a forward leading portion, the sidewalls being continguous with a bucket pan having a top edge, a rear portion, and a bottom edge, the top and bottom edges together with leading portions of the sidewalls defining an opening into a cavity defined by the sidewalls and pan; and mounting means on the pan proximal the top edge for pivoting the bucket about a rotation axis; the bottom edge and rotation axis defining a strike plane and the leading portions having an upper border extending substantially from the rotation axis and a lower border extending substantially from the bottom edge, the upper and lower borders opposite with respect to an apex spaced forward of the strike plane, and wherein the distance between the apex and the rotation axis is more than one half the distance between the rotation axis and the bottom edge and the distance between the apex and the strike plane is about one fourth the distance between the rotation axis and the bottom edge.

4,459,769

SNOWPLOW ATTACHMENT

William R. Willis, Sr., Rte. 10, P.O. Box 19, Grantham, N.H. 03753

Filed Aug. 9, 1982, Ser. No. 406,273
Int. Cl.³ E01H *5/06*
U.S. Cl. 37—275 **6 Claims**



1. For use in connection with a vehicle driven snowplow which otherwise tends, at higher plowing speeds, to propel snow in an upward and rearward direction upon the vehicle's windshield and which also tends to cause the snow to be rolled

back into the path of the snowplow, an attachment yieldably mounted to the top of said snowplow blade, that comprises:

a. a unitary curved deflector equal in width to the snowplow blade and attached to the top of said blade having a lower straight planar edge and two curvilinear deflector portions that extend in an upward and forward direction from the said straight lower blade edge into a concave configuration; said two curvilinear portions form, at the midpoint, a V-type configuration that extends in a more forward and downward direction than the ends of the deflector portions and thus forming said V-type configuration;

b. self-contained adjustable compression springs that allow the attachment to rotate backwards when snow pressure becomes greater than the forward force exerted by the compression springs; and

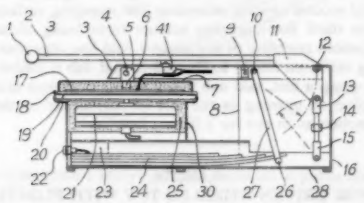
c. a means whereby said attachment is removably attached to the top of a conventional snowplow blade.

4,459,770

STEAM IRONING PRESS

Claude Brenot, Poitiers, France, assignor to Superba, Mulhouse, France

Filed Jul. 12, 1982, Ser. No. 397,360
Claims priority, application France, Jul. 15, 1981, 81 13735
Int. Cl.³ D06F 71/16
U.S. Cl. 38—34 **8 Claims**



1. A steam ironing press comprising a frame, a lower plate having steam dispensing means secured to said frame, a support on said frame, a movable upper plate having a heating sole plate, an upper arm integral with said upper plate, means including a pivot for mounting said upper arm on said support for movement between an open position of the press and a closed position of the press at which said upper plate is able to contact said lower plate whereby a garment inserted between the plates is tightly pressed in the closed position of the press, a spring, means securing one end of said spring to said frame, means connecting the other end of said spring to said upper arm to press said plates together, said spring acting on the upper arm on a side opposite to the upper plate with reference to the pivot and at such a distance from the pivot that the weight of the movable plate is balanced by the force of the spring, said pivot being so connected to said upper arm that in the closed position of the press a vertical clearance exists between said pivot and said support, and an additional mechanical support acting on said upper arm on the side opposite the movable plate with reference to the pivot and at a distance therefrom greater than that between the pivot and the point of action of the spring on the upper arm to prevent the pivot from seating on said support in the closed position of the press.

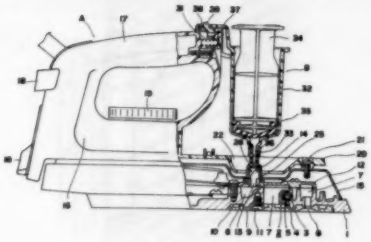
4,459,771

SELF CLEANING STEAM IRON

Nobutaka Ogata, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 14, 1981, Ser. No. 330,322
Claims priority, application Japan, Feb. 14, 1981, 56-19563
Int. Cl.³ D06F 75/18
U.S. Cl. 38—77.8 **9 Claims**

1. A steam iron set comprising a soleplate having a heater, a steam generating chamber formed in the soleplate, a steam channel for guiding the steam generated in the steam generating chamber to steam vents formed in an ironing surface, an iron main body having a fixed handle above the soleplate, a reservoir detachably mountable on the iron main body and provided at its bottom with an outlet nozzle connectable to passage means communicating with the steam generating chamber, the reservoir further being provided with means for



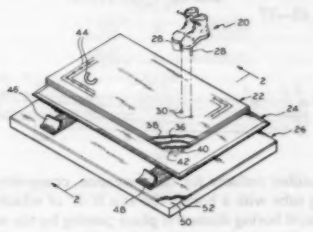
controlling the supply of water to the steam generating chamber through the outlet nozzle, and a water pump mountable on the iron main body in exchange for the reservoir and having a discharge nozzle connectable to the passage means, the water pump being adapted to forcibly release water therefrom, pass the water through the steam generating chamber and the steam channel and vigorourly discharge the water from the steam vents.

4,459,772

DEBOSSABLE PLASTIC PLAQUE WITH FINE JEWELRY APPEARANCE

James C. Kanzelberger, Riverside, Ill., assignor to Contemporary, Inc., Riverside, Ill.

Continuation-in-part of Ser. No. 209,753, Nov. 24, 1980, Pat. No. 4,384,416. This application Jul. 2, 1982, Ser. No. 394,527
Int. Cl.³ A47G 1/06
U.S. Cl. 40—152.1 **18 Claims**



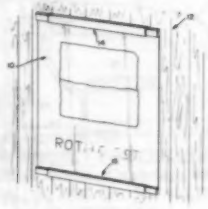
1. A plaque simulating an engraved metal plate comprising a metal backing plate of a given metallic color having a planar surface terminated at its periphery in a generally decorative framing surface area which preserves the look of an edge of a metal plate, debossable plastic material bonded to said backing plate, said plastic material comprising a rigid thermoplastic plate covered by a thin heat insulating film of essentially said given metallic color, said film following and containing a debossment of said thermoplastic plate when debossed under heat and pressure, the edges of said debossable material coordinating with the metallic color of said framing surface area to give an overall appearance of a single and unitary metal plate having an engraved surface formed by said debossment.

4,459,773

TENSIONED MOUNTING DEVICE FOR THIN, PLANAR ARTFORMS

Jane M. Sandlin, and William C. Sandlin, both of 1301 Baker La., Waco, Tex. 76708

Filed Feb. 9, 1982, Ser. No. 347,457
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—155 **19 Claims**



1. A tensioned mounting device for thin, planar objects comprising:

a first bar mechanism for attachment to one edge of a thin, planar object and to a support member, said first bar mechanism having an adjustable length in a direction parallel to said one edge;

a second bar mechanism for attachment to an opposite edge of a thin, planar object, said second bar mechanism having an adjustable length in a direction parallel to said opposite edge and being adapted to be suspended from the thin, planar object thereby gravitationally tensioning the thin, planar object; and

each of said bar mechanisms having means for tensioning the attached edge of the object in a direction parallel to the attached edge.

4,459,774

HAND WEAPON CALIBER REDUCERS

Serge Ferretti, La Fabrigoule Saute Yrargues, 34270 Saint Mathieu de Treviers, France

Filed Mar. 19, 1982, Ser. No. 359,904
Claims priority, application France, May 5, 1981, 81 08860
Int. Cl.³ F41C *21/10*
U.S. Cl. 42—77 **6 Claims**

1. A caliber reducer for hand weapon, comprising a caliber reducing tube with a boring the axis B'-B' of which is situated in the barrel boring diametral plane passing by the weapon line of sight, characterized in that the reducing tube boring axis diverges upwardly relative to the barrel axis in the direction of the muzzle.

4,459,775

WEEDLESS SINKER

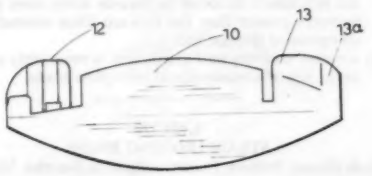
Robert W. Ratte, North Oaks, Minn., assignor to Water Gremlin Company, White Bear Lake, Minn.

Filed Jun. 28, 1982, Ser. No. 392,943
Int. Cl.³ A01K *95/00*
U.S. Cl. 43—44.89 **6 Claims**

1. A weedless type sinker for storage in a bulk condition prior to using the sinker, said sinker having a center line and a general streamlined shape comprising a sinker body having a first end and a second end;

a nub located on one end of said sinker for folding over to grasp a line;

a line organizer located in a spaced position from said nub, said line organizer including a first upward extending line engaging surface, a second upward extending line engaging surface and a third line engaging surface connecting said first upward extending line engaging surface to said second upward extending line engaging surface, said first upward extending line engaging surface and said second upward extending line engaging surface coacting to prevent lateral displacement of a line located therebetween,



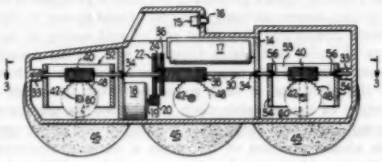
one of said line engaging surfaces forming a minimum diverging angle of about 15° with respect to the center line through said sinker to thereby prevent the opening between said first upward extending line engaging surface, said second upward extending line engaging surface and said third line engaging surface from being closed by repeated tumbling of said sinkers, said line organizer having sufficient height so that when said nub is folded over to grasp a line, said nub and said line organizer coact to define an opening in the end of said sinker to thereby function as an eye for a fishing line.

4,459,776

MOTOR DRIVEN WHEELED TOY WITH FLOATING DRIVEN AXLE

Eugene Jaworski, Park Ridge; Jeffrey D. Breslow, Highland Park; Tom K. Sakoda, Chicago, and Harry Disko, South Barrington, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 25, 1982, Ser. No. 436,650
Int. Cl.³ A63H *17/00*
U.S. Cl. 446—462 **20 Claims**



1. A motor driven toy with ground engaging wheels comprising:

a chassis;

a rotatable drive shaft with an axis carried by the chassis;

a power connection connectable to a motor and the shaft to rotate the shaft;

a first axle with an axis and ends disposed transverse to the shaft;

a wheel mounted on each end of the first axle for movement with the axle;

a first connector means carried by the shaft and carrying the first axle for rotation around the first axle axis and to swivel about the axis of the shaft;

power transmission means between the shaft and the first axle that remains engaged while the first axle swivels about the shaft;

a second axle with an axis and ends disposed transverse to the shaft;

a wheel mounted on each end of the second axle for movement with the second axle;

a second connector means carried by the shaft and carrying the second axle for rotation around the second axle axis and to swivel about the axis of the shaft; and

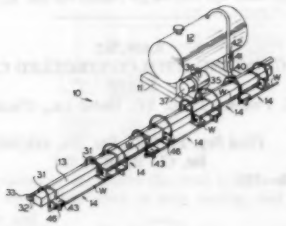
power transmission means between the shaft and the second axle that remains engaged while the second axle swivels about the shaft.

4,459,777

RECIRCULATING ROPE WEEDER

John O. Moore, Helena, and Frank O. Griffin, West Helena, both of Ark., assignors to Sprayrite Manufacturing Company, West Helena, Ark.

Filed Mar. 5, 1982, Ser. No. 355,236
Int. Cl.³ A01G *13/00*
U.S. Cl. 47—1.5 **14 Claims**



1. Apparatus for applying liquid chemical to plants comprising:

a support framework adapted to be connected to a vehicle and having a bar extending in a direction generally transverse to the direction of travel of said vehicle,

a source of liquid chemical mounted on said framework,

a first manifold means extending along the length of said bar for feeding liquid from said source, including a pump for pressurizing said liquid being fed,

a second manifold means extending along the length of said bar for returning liquid to said source, and

a series of discrete wicks supported along one face of said bar, each wick separately comprising a porous, saturable hollow body with an inlet means connecting one end of said hollow body to said first manifold means and an outlet means connecting the opposed end of said tube to said second manifold means each inlet and outlet means for each respective body having selectable flow restrictors to independently preselectively control the level of saturation of said body.

4,459,778

ADJUSTING DEVICE FOR A SLAT BLIND CONTAINED IN A SEALED DOUBLE GLAZED WINDOW

James Ball, 14256 Green Crest Dr., White Rock, British Columbia, Canada V4A 2Y6

Filed Dec. 27, 1982, Ser. No. 453,271
Int. Cl.³ E06B *7/08*
U.S. Cl. 49—64 **6 Claims**

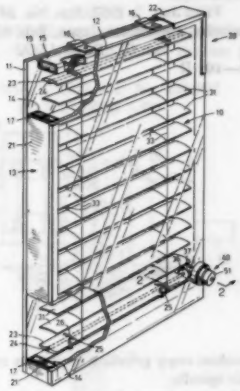
1. A sealed double glazed window comprising:

two spaced panes of glass sealed in a frame;

a slat blind positioned in the space between the panes, said blind having control means for adjusting the slats;

one pane of glass having an aperture therethrough for providing access to the control means; and

an adjusting device mounted about the aperture so that the slats may be adjusted while maintaining the window seal, said device having a flexible diaphragm sealed about the



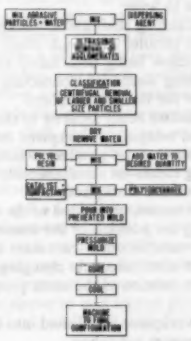
aperture and having adjusting means passing through the aperture from the diaphragm to the control means.

4,459,779

FIXED ABRASIVE GRINDING MEDIA

John C. S. Shen, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 16, 1982, Ser. No. 418,948
Int. Cl.³ B24D *3/32*
U.S. Cl. 51—296 **4 Claims**



1. The method of fabricating an abrasive grinding media comprising:

mixing classified abrasive particles which have been surface treated with a dispersing agent and from which agglomerates have been removed with multifunction, low viscosity polyether polyol; multi function polyisocyanate; water and a catalyst;

placing the mixture in a mold which has been preheated to 40° to 70° C.;

pressurizing the mold cavity to 60 to 120 pounds per square inch; and

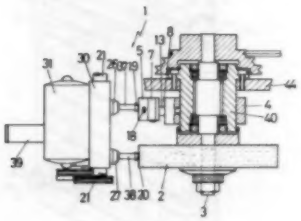
curing at a temperature of at least 150° C., whereby a fast reaction occurs at conditions of elevated temperature and pressure to produce a microstructure free of flow patterns with a density in excess of 0.5 gram per cubic centimeter.

4,459,780

CABOCHON COPY GRINDING APPARATUS

Takahiro Imahashi, 3-21-25, Higashi, Motomachi, Kokubunji City, Tokyo, Japan

Filed Jan. 7, 1982, Ser. No. 337,858
Claims priority, application Japan, Feb. 4, 1981, 56-15480
Int. Cl.³ B24B 17/02
U.S. Cl. 51—101 R 3 Claims



1. A cabochon copy grinding apparatus comprising:
a rotatable spindle;
a spindle bearing drum aligned coaxially with the rotatable spindle;
a grinding wheel being fixed to the rotatable spindle and having an outer periphery;
a template supporting ring being fixed to the spindle bearing drum and having a mounting angle adjustable in relation thereto;
a template head adjustably supported on the template supporting ring;
a flexible template being adjustable attached to the template head and having a variable outer curvature;
means for adjustably attaching the flexible template to the template head so that the curvature of the flexible template can be adjusted to match the outer periphery of the grinding wheel as the periphery of the grinding wheel changes due to wear;
a cabochon attaching shaft and a workpiece attaching shaft extending in parallel with each other;
a master cabochon being detachably secured to the cabochon attaching shaft and contacting the variable outer curvature of the flexible template;
a workpiece holder being secured to the workpiece attaching shaft and bringing a workpiece into contact with the outer periphery of the grinding wheel;
an interlocking means for simultaneously rotating the master cabochon and the workpiece; and
a manual lever means, connected to the interlocking means, for changing the position of the master cabochon in relation to the variable outer curvature of the flexible template and for simultaneously changing the position of the workpiece in relation to the outer periphery of the grinding wheel;
whereby the workpiece is polished into the same configuration as the master cabochon.

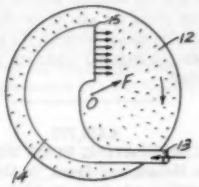
4,459,781

GRINDING AND POLISHING APPARATUS

Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576

Filed Mar. 30, 1981, Ser. No. 248,856
Int. Cl.³ B24B 37/04
U.S. Cl. 51—123 R 12 Claims

1. An apparatus for grinding/polishing a material sample surface comprising:
a horizontal circular wheel having a planar and smooth, upper surface containing a center and rotatable about a central vertical axis of rotation which passes through the center; and
means for simultaneously feeding, from an entrance end, mixed abrasive particles for discharge at an exit end onto an elongated discharge region on the upper surface, said discharge region extending over a major portion of a selected line which extends from the center to the periphery of the wheel, said mixed abrasive particles being suspended and carried by a fluid, the motion of the carrying



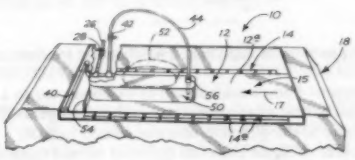
fluid flowing in the feeding means producing centrifugal forces which simultaneously act on all the mixed abrasive particles to cause the mixed abrasive particles to separate according to their densities and sizes before their discharge onto the discharge region on the upper surface.

4,459,782

BELT GRINDING WITH CONTROLLED COOLANT FLOW

Donald C. Palmer, 15902 SE. Heidi La., Clackamas, Oreg. 97015

Filed Sep. 16, 1982, Ser. No. 418,988
Int. Cl.³ B24B 21/00
U.S. Cl. 51—141 9 Claims



3. A grinder of the type employing a moving belt having a working run for grinding a workpiece comprising:
a platen for supporting the working run, said platen including a belt-supporting planar portion defining a plurality of laterally spaced, elongated troughs obliquely disposed with respect to the direction of belt travel, each said trough having upstream and downstream ends; and
conduit means with first outlet means including an elongated manifold extending adjacent said upstream ends of said troughs, and a plurality of nozzle means, one for each trough, communicating with said manifold and said upstream ends for injecting coolant liquid under pressure into each said trough.

4,459,783

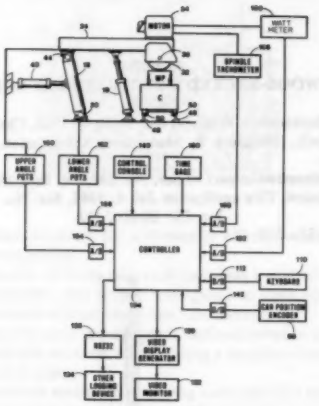
WORKPIECE WEIGHING SYSTEM FOR CONDITIONING GRINDERS

Jack L. Odell, II, and Robert F. Obear, both of Snohomish County, Wash., assignors to Western Gear Machinery Co., Everett, Wash.

Filed Aug. 3, 1982, Ser. No. 404,701
Int. Cl.³ B24B 49/00
U.S. Cl. 51—165.74 7 Claims

1. A system for measuring the weight of material removed from a workpiece by a grinding wheel driven by an electric motor during a grinding operation, comprising:
power measuring means for periodically measuring the power used by said electric motor and for generating a power signal indicative thereof;

controller means for calculating a grinding coefficient and then periodically multiplying said grinding coefficient by a function of said power signal to determine an incremental weight removal value indicative of the weight removed since any previous multiplication, said controller means further adding said incremental weight removal value to any previously determined incremental weight



removal values to determine the total weight of material removed up to that point in time during said grinding operation; and

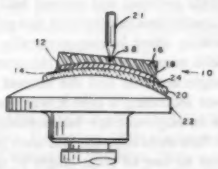
display means receiving an input from said controller means for generating a visually perceptible indication of the total weight of material removed as determined by said controller.

4,459,784

COMPUTER LENS BLOCK AND METHOD OF FORGING

William D. Hernandez, and Adolph Behnke, both of P.O. Box 728, Tarpon Springs, Fla. 33589

Filed Nov. 13, 1978, Ser. No. 960,225
Int. Cl.³ B24B *41/06*
U.S. Cl. 51—216 LP **10 Claims**



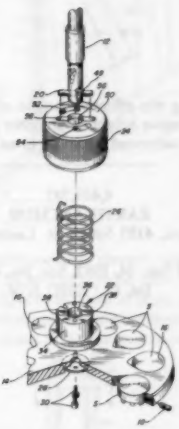
1. A lens block of the type used to secure an opthalmic lens during formation of the lens surface, said lens block comprising: a forged, sintered metal one-piece block body comprising a first surface formed in one face of said block body and a second surface formed in an oppositely disposed face of said block body, said first surface having a configuration substantially corresponding to the configuration of a lens surface being formed, and said second surface comprising centering means integrally formed therein and comprising a plurality of apertures disposed in substantially aligned, linear spaced apart relation to one another, each of said apertures being defined by a substantially inverted conical configuration and being recessed into said block body from said second surface; the exterior of said lens block having minute cavities formed therein to render said surface smoothly granular, thereby affording enhanced adhesion thereto of adhesive compositions while permitting ready cleaning of said lens block surfaces.

4,459,785

CHUCK FOR VERTICALLY HUNG SPECIMEN HOLDER

Robert E. Zimmer, Niles, Ill., assignor to Buehler Ltd., Lake Bluff, Ill.

Filed Nov. 8, 1982, Ser. No. 439,997
Int. Cl.³ B25B *5/00*
U.S. Cl. 51—237 R **7 Claims**



1. A chuck assembly for suspending a work holder from a vertical drive shaft having a horizontal cross pin adjacent its lower end, said chuck assembly comprising, in combination, a generally cylindrical chuck body having a recess in its upper end including a transverse recess portion for receiving the lower end of said drive shaft with said cross pin seated in said transverse recess portion, a rotatable sleeve mounted over said body including a sleeve top wall which overlies the top of said body, a central opening including a transverse slot in said sleeve top wall which is dimensioned to permit passage therethrough of said drive shaft and cross pin, said sleeve being rotatable relative to said body between an open position where said transverse slot is aligned with said transverse recess portion to permit said cross pin to pass through said slot and be seated in said recess, and a locked position where said transverse slot is out of alignment with said transverse recess portion so said sleeve top wall overlies and traps a cross pin seated in said transverse recess, stop means for defining the open and locked positions of said rotatable sleeve, and spring means for biasing said rotatable sleeve to said locked position.

4,459,786

LONGITUDINALLY BOWED TRANSVERSELY POLYGONAL BOOM FOR CRANES AND THE LIKE

Raymond F. Pitman, Prairie Village, and Robert M. Bornowski, Olathe, both of Kans., assignors to RO Corporation, Olathe, Kans.

Filed Oct. 27, 1981, Ser. No. 315,308
Int. Cl.³ B66C *23/62*; E04H *12/18*
U.S. Cl. 52—115 **13 Claims**

1. A boom, comprising:

a plurality of elongated, tubular, telescopically interfitted boom sections, including an extensible, uppermost boom section; and

means adjacent the outer end of said uppermost boom section for suspending a load therefrom and as a consequence to impose a downwardly directed stress force on said boom,

at least certain of said boom sections in an unstressed condition being longitudinally bowed in an upward direction

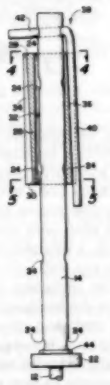
for rendering the effective height of said boom greater than the effective height of an other wise identical boom having only unbowed boom sections.

4,459,787

EARTH ANCHOR

Stanley W. Wilcox, 4187 South St. Louis Ave., Tulsa, Okla. 74105

Filed Sep. 24, 1982, Ser. No. 422,707
Int. Cl.³ E02D 5/74
U.S. Cl. 52—155 **5 Claims**



1. An earth anchor comprising:

an elongated shaft having a pointed lower end and having at least one opening therethrough perpendicular to the shaft longitudinal axis and in the upper portion thereof;

an enlarged external diameter stop member affixed to said shaft intermediate the ends thereof and below said openings;

a weighted impactor having an internal opening therethrough of a diameter greater than the external diameter of said shaft portion above said stop member, the impactor being slidably received on said shaft upper portion, the impactor having at least one external surface area in a plane of the axis of said opening therethrough which is tapered; and

an elongated handle member having at least one end portion of an external diameter less than said shaft opening, the shaft being driven in the earth by the reciprocal downward impact of said impactor on said stop member and the shaft can be extricated from the earth by reciprocal impact of said impactor against said handle member positioned in said opening in said shaft, and wherein said handle member is of L-shaped configuration whereby a first portion of said handle member may be inserted into said opening in said shaft with the second portion extending generally parallel to and spaced apart from said shaft and whereby said impactor tapered surface may be forced against said handle second portion by longitudinally positioning said impactor on said shaft to restrain said impactor against further longitudinal movement.

4,459,788

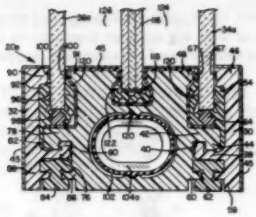
PLYWOOD-BACKED DOUBLE COURSE SHINGLE PANEL

Joe L. Bockwinkel, Winlock, and Willis G. Pehl, Chehalis, both of Wash., assignors to Shakertown Corporation, Winlock, Wash.

Continuation-in-part of Ser. No. 238,274, Feb. 25, 1981, abandoned. This application Jul. 6, 1981, Ser. No. 280,719
Int. Cl.³ E04D 1/20
U.S. Cl. 52—535 **18 Claims**

1. The process of making wood shingle panels which comprises severing standard fulllength shingles transversely of their lengths between their tip and butt ends and thereby making first tip shingle sections and second butt shingle sections, and bonding in contiguous relationship to a substantially planar surface of a backing sheet having generally parallel opposite edges and a width nearly as great as the combined lengths of the first tip shingle sections and the second butt shingle sections a face layer including a face lower course of such first shingle sections in edge-to-edge relationship having most of the area of their face sides exposed and their butts adjacent and generally parallel to one of such edges of the backing sheet when construction of the panel is completed and a face upper course of such second shingle sections in edge-to-edge relationship having all of their face sides exposed, their tips adjacent and generally parallel to the opposite one of such edges of the backing sheet and their butt end portions disposed adjacent to and overlapping the tip end portions of the first shingle sections in the face lower course between the generally parallel opposite edges of the backing sheet for only a small fraction of the length of the first tip shingle sections forming the face lower course with those portions of the outer surface of the first tip shingle sections forming the face lower course being exposed adjacent to the butts of the second butt shingle sections forming the face upper course when the panel is finished and with no face course of shingles or shingle sections interposed between such face lower course and such face upper course.

4,459,789
WINDOW
Donald F. Ford, 2639 Wendell, Richmond, Calif. 94804
Filed May 20, 1982, Ser. No. 380,023
Int. Cl.³ E06B 7/12
U.S. Cl. 52—656 2 Claims



1. A frame assembly for a thermally efficient multi-paned window, comprising:

(a) a plurality of frame rails each including a central section;

(b) a respective side section configured to mate with each said central section along one side thereof;

(c) respective pane cavity means, defined between said central and side sections, for receiving a peripheral margin of a window pane;

(d) connection means for attaching each said side section to the respective central section while permitting movement of said side section relative to each said central section in order to apply pressure along said peripheral margin of said window pane within said pane cavity means, said connection means including respective innerlocking lip portions associated with each said central section and said side section;

(e) locking means associated with each said central and the respective side section for urging said side section relative to said central section in a manner to apply said pressure and sealingly hold said peripheral margin in said pane cavity means; and

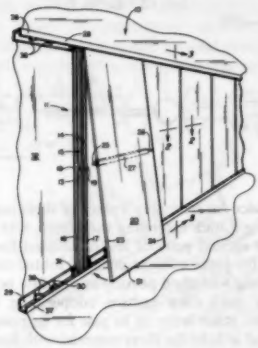
(f) said connection means being located outwardly adjacent said pane cavity means, and said locking means including spine means for extending along the said frame means exterior of said connecting means for urging a portion of said side section away from said central section and pivoting said side section about said connection means and urging an upper portion of said side section toward a portion of said central section, providing compressive force against said peripheral margin.

4,459,790
WALL PANEL LOCKING MECHANISM
Eugene F. Vermillion, Columbus, Ohio, assignor to The Columbus Show Case Company, Columbus, Ohio
Filed Aug. 4, 1983, Ser. No. 520,428
Int. Cl.³ E04B 1/60
U.S. Cl. 52—764 3 Claims

1. In a wall structure that includes a pair of laterally spaced apart, parallel, vertically arranged studs, each formed with a longitudinally extending, forwardly projecting, panel positioning rib and at least one laterally projecting base flange spaced rearwardly of said rib, and a panel disposed between the studs and provided with front and back surfaces and with opposite vertical side surfaces positionable between the panel-positioning ribs of said studs, said panel having elevated and lowered positions relative to said studs, a wall panel locking mechanism comprising:

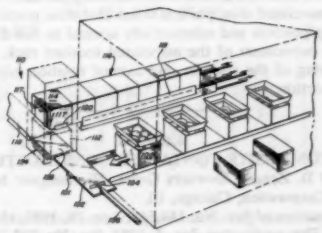
(a) at least one latch-receiving ledge integrally formed on each of said studs intermediately of the rib and base flange, said ledge being substantially longitudinally coextensive with and disposed laterally and rearwardly of said rib and having a forwardly opening, latch-receiving passageway formed therein; and

(b) at least one pair of laterally spaced apart latch members connected with the back surface of the panel in proximity



to the vertical side surfaces thereof, said latch members being insertable in and removable from the passageways formed in the ledges of said pair of studs with said panel in its elevated position and immovable through said passageways with said panel in its lowered position.

4,459,791
TELESCOPING BOX ASSEMBLY
John L. Booth, Vero Beach, Fla., assignor to Booth Manufacturing Company, Fort Pierce, Fla.
Filed Oct. 27, 1981, Ser. No. 315,365
Int. Cl.³ B65B 7/28
U.S. Cl. 53—290 5 Claims



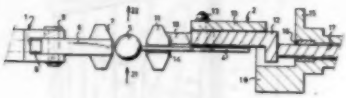
1. A machine for telescopingly fitting a box top over a loaded container to from a closed container comprising a main frame, shelf support means for supporting a box top within said machine vertically above said loaded container, a box top spreader assembly, means for moving said box top spreader assembly to release the box top from said shelf support means and retain the box top thereon, means for biasing said box top and box top spreader assembly over said loaded container in telescoping relationship therewith to close said loaded container, and means for moving said box top spreader assembly from said box top after the container is closed to permit removal of the closed container from the machine.

4,459,792

DEVICE FOR TWISTING A PACKING WRAPPING

Henricus A. J. M. Derckx, St. Antoniusstraat 31, Weert, Netherlands

Filed May 13, 1981, Ser. No. 262,888
Int. Cl.³ B65B 7/12
U.S. Cl. 53—370 **3 Claims**



1. In a device for wrapping a piece of sheet material about an object having a stick extending therefrom, said device including first and second pairs of levers adapted for receiving the object with the piece of sheet material folded thereabout, each lever including a toothed portion and a claw portion having a face surface, each claw portion cooperating with the claw portion of the other lever of its pair for gripping the piece of sheet material to hold the sheet material with the object therein and with the stick extending from the sheet material; first and second oppositely rotatable heads; first and second means hingedly mounting said first and second pairs of levers to said first and second rotatable heads respectively; first and second toothed racks slidably mounted in said first and second rotatable heads respectively, each toothed rack longitudinally slidably movable in its respective rotatable head, the teeth of each toothed rack cooperating with the toothed portions of the associated pair of levers for pivoting the levers to bring the claw portions thereof toward each other, to a gripping position in which the face surface of each claw portion lies in a plane substantially parallel to the direction of slidable movement of the associated toothed rack with the face surfaces of the claw portions of each pair of levers abutting each other to cause the claw portions to grip the piece of sheet material, and to bring the claw portions thereof away from each other, to cause the claw portions to release the piece of sheet material, the claw portions of one of said pairs of levers having a recess adapted to permit passage of the stick therethrough; and means for slidably moving said toothed racks within said rotatable heads, the improvement in which each lever of said one of said pairs of levers includes an offset portion coupling the claw portion and the toothed portion thereof, said offset portion and said toothed portion being offset from the axis of rotation of the associated head in a direction substantially parallel to the plane of the associated claw portion when that claw portion is in the gripping position and substantially normal to the direction of slidable movement of the associated toothed rack, to permit positioning of the stick in said axis of rotation adjacent said offset portion.

4,459,793

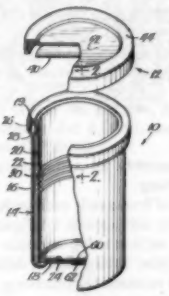
COMPOSITE CONTAINER CONSTRUCTION

Richard D. Zenger, Downers Grove, Ill., assignor to National Can Corporation, Chicago, Ill.

Continuation of Ser. No. 144,545, Apr. 28, 1980, abandoned.
This application Jun. 4, 1982, Ser. No. 385,242
Int. Cl.³ B65B 3/00, 7/28, 31/04
U.S. Cl. 53—434 **9 Claims**

1. A method of packaging products comprising the steps of placing an inner flexible liner means into an outer container, said outer container having a relatively rigid side wall means upstanding from the bottom wall to provide an open end, forming a rigid ring on an upper peripheral open end of said liner, attaching the rigid ring to the periphery of said open end of said container to produce a seal between the liner and container and a space between the liner and container below the open ends, introducing a product into said liner through an open end thereof with said liner flexing during insertion of said product to generally conform said liner to the inside of said outer container, sealing said open end of said liner, causing said product in said liner to contract whereby at least portions of said liner will draw away from said outer container, the contraction of said product causing a substance to be drawn through said vent hole means into said space between said liner and said outer container, and subsequently sealing said vent hole means to seal the space between said liner and said outer container.

8. A method of vacuum packaging food products comprising the steps of inserting an inner liner into an outer container having a rigid side wall and a bottom wall, supporting a periph-



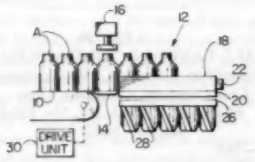
eral open end of said liner on the peripheral open end of said container, producing an air space between said outer container and said liner that is in venting communication with the atmosphere through a venting opening with the vent opening being located between the open end of the liner and the open end of the container, inserting a product into said liner, hermetically sealing said open end of said liner with a cover liner and effecting a negative pressure in said liner while maintaining the air space between said container and liner at substantially atmospheric pressure, and subsequently sealing a vent opening with said cover liner after said product is sealed and processed to hermetically seal said outer container.

4,459,794

ACCELERATED LOADING FOR CASE PACKER

John L. Raudat, North Madison, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.

Filed Jun. 1, 1981, Ser. No. 269,376
Int. Cl.³ B65B 21/16
U.S. Cl. 53—497 **4 Claims**



1. Apparatus for loading groups of articles into upwardly open packing cases, and comprising in combination an infeed conveyor for feeding articles in a downstream direction, means for selectively holding back articles on said infeed conveyor, a grid downstream of said infeed conveyor for receiving articles when said grid is in one condition, said grid capable of depositing grouped articles into an upwardly open packing case when in a second condition, drive means for operating said infeed conveyor at a normal speed, a variable speed drive unit having an output shaft, one-way clutch means coupling said output shaft to said infeed conveyor, said variable speed drive unit having an input shaft coupled to said drive means, a single

revolution clutch coupling said drive means to said variable speed drive input shaft to selectively couple said variable speed drive output shaft to said infeed conveyor for one revolution of said variable speed input shaft, a second one-way clutch means coupling said drive means to said infeed conveyor so that the latter can be selectively driven by said variable speed drive output shaft, and means responsive to release of said article holdback means to cause said single revolution clutch to so couple said variable speed drive output to said infeed conveyor during the cycle of operation of the apparatus.

4,459,795

BITLESS HARNESSING SYSTEM

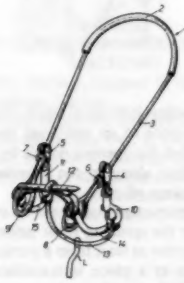
Eric Le Tixerant, 8, Rue Erlanger, 75008 Paris, France

Filed Feb. 2, 1983, Ser. No. 463,114

Claims priority, application France, Feb. 2, 1982, 82 01626; Jan. 25, 1983, 83 01075

Int. Cl.³ B68B *1/02, 1/04*

U.S. Cl. 54—6 A **9 Claims**



1. A bitless horse harnessing system, comprising a head piece having a portion adapted to rest against the nape of a horse's neck, said head piece comprising a tie element having opposite ends; a flexible nose band interconnecting said ends and being adapted to extend over the horse's nose; a pair of connecting elements, each including a fastener at one end and a pulley at the other end, which is spaced from said fastener, said tie element ends extending partially about said pulleys such that said connecting elements are respectively movably connected along said tie element near its opposite ends; first stop blocks located on said tie element between the respective ends thereof and the respective pulleys of said connecting elements for limiting the displacement of the connecting elements toward said nose band; a flexible under-jaw element interconnecting the fasteners of said connecting elements and adapted to extend under the horse's mouth; said nose band and said under-jaw element comprising a flexible ring; and a lunge element connected to said under-jaw element, whereby a pull on said lunge element effects a tensioning of said tie element via the pulleys of said connecting elements, said tensioning being transmitted to said nose band and to said head piece portion for maintaining the horse's head between said head piece portion and said flexible ring.

4,459,796

GATHERING PLANT TRASH

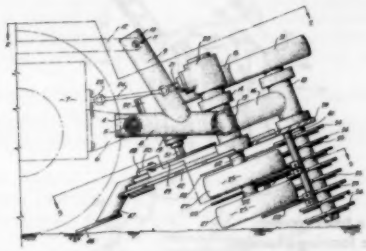
Ralph E. Stokes, P.O. Box 262, Wee Waa, New South Wales, 2388, Australia

Filed Jun. 29, 1982, Ser. No. 393,325

Int. Cl.³ A01D *35/26*

U.S. Cl. 56—14.3 **6 Claims**

1. A trash gathering machine comprising: a machine frame adapted to be traversed over the ground along a row of standing trash stems; a pair of spaced apart, side-by-side, parallel, rotatable shafts borne on said frame with their axes acutely angled from vertical disposition so that the upper ends of the shafts are further ahead in the direction of machine travel than are their lower ends; at least one pair of trash-gathering resilient rollers, each of which rollers is respectively mounted on the lower portion of each of said shafts, said pair of rollers being in mutual contact over a substantially flat chordal area common to both and laying, when said machine is in use, in a plane substantially coincident with that occupied by the standing trash stems; means to contra-rotate said rollers so that stems entering the leading end of said chordal contact area are uprooted, moved towards and expelled from the trailing end of



that chordal contact area; an inclined array of scissoring blades located closely adjacent the trailing end of said chordal area whereby trash stems emerging and expelled from said chordal area are transversely sheared into lengths which are fractional relative to the original stem lengths, the inclination of said array of scissoring blades being essentially parallel with said rotatable shafts with the lowermost end of said array of blades being disposed closely adjacent the plane of the ground surface over which the machine is to be traversed.

4,459,797

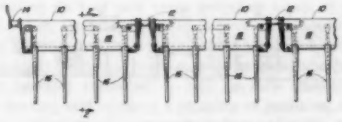
HARVESTER REEL PICK-UP BAT CONSTRUCTION

James M. Gessel, La Moille; Gary L. Kunz, and E. Louis Scheidenhelm, both of Mendota, all of Ill., assignors to Hart-Carter Company, Mendota, Ill.

Filed Sep. 30, 1982, Ser. No. 431,052

Int. Cl.³ A01D *57/02*

U.S. Cl. 56—220 **5 Claims**



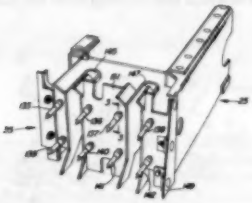
1. A harvester reel bat and spider mounting assembly comprising a pivot shaft having a journal portion intermediate its ends and a flexure strap fastened to the shaft at each end of the journal portion, said flexure straps projecting substantially radially from the pivot shaft and having end portions normal to the shaft axis, an attachment bracket substantially aligned with an adjacent flexure strap and having an opening at one end for endwise reception of the pivot shaft, a pair of clamping straps integrally mounted on the attachment bracket normal to the surface thereof and being formed to fit the end side walls of a harvester reel bat inserted between them, means to secure said clamping straps to the bat when it is inserted between them, and means for securing the free end of a flexure strap to an adjacent end of the said attachment bracket.

4,459,798

BALER WITH A CONTROLLED RATE PRESERVATIVE APPLICATOR

Garn F. Penfold, East Moline, Ill., and David L. Rabe, Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jul. 12, 1982, Ser. No. 397,304
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 10 Claims



5. In a baler having:

a bale forming chamber,

a pickup for gathering crop material from the ground and conveying said crop material into said chamber,

a cyclically operable plunger for compressing and moving crop material through said chamber, and

applicator means for applying a high volatility, crop treating fluid to said material as said crop material is formed into a bale, the improvement comprising:

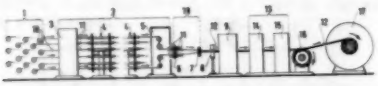
control means for automatically, incrementally measuring the quantity of crop material being processes by said baler for each cycle of said plunger and for automatically adjusting the rate of application of said fluid responsive to each incremental measurement.

4,459,799

QUAD GUIDE DEVICE FOR GUIDING QUADS TO A TELEPHONE CABLE STRANDING MACHINE

Michel Beucher, Calais, France, assignor to Les Cables de Lyon, Clichy Cedex, France

Filed Apr. 7, 1983, Ser. No. 483,081
Claims priority, application France, Apr. 9, 1982, 82 06244
Int. Cl.³ H01B *13/02, 13/04*
U.S. Cl. 57—293 3 Claims



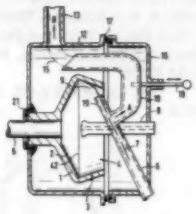
1. A quad guide device for a telephone cable stranding machine having first and second longitudinally spaced stranding assemblies and wherein said first stranding assembly twists together fourteen groups of four wires to form fourteen quads and said second stranding assembly twists together said quads to form said cable, a laying former is positioned between said first and second stranding assemblies and just ahead of said second stranding assembly, and said guide device is positioned upstream of said laying former and downstream of said first stranding assembly and receiving said quads made on said first stranding assembly and guiding them into said laying former, said guide device comprising a strand distributor die at the output of the first stranding assembly and intermediate guide means positioned between the strand distributor die and the laying former for separating outer quads from inner quads.

4,459,800

METHOD OF FEEDING INDIVIDUAL FIBERS TO A SPINNING ROTOR AND DEVICE FOR CARRYING OUT THE METHOD

Fritz Stahlecker, Josef-Neidhart-Strasse 18, Bad Überkinger, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, both of, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 376,032
Claims priority, application Fed. Rep. of Germany, May 26, 1981, 3120877
Int. Cl.³ D01H *1/12, 7/892*
U.S. Cl. 57—411 51 Claims



1. A method for feeding individual fibers from an opening device to a spinning rotor of an open-end spinning unit, in which fibers are seized at the opening device by a transporting air stream and are taken along in the direction toward the rotor, comprising the steps of:

(a) separting the fibers transported by the air stream from the opening device to the spinning rotor prior to their entry into the spinning rotor at least from a portion of the transporting air stream at a place intermediate the opening device and the spinning rotor, and

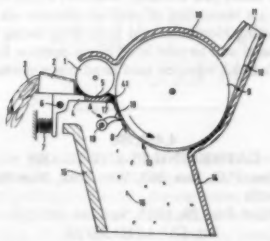
(b) bleeding off the portion of the transporting air stream freed of the fibers prior to reaching the spinning rotor.

4,459,801

FEEDING AND OPENING DEVICE FOR OPEN-END SPINNING UNITS WITH A SEPARATION OPENING FOR IMPURITIES

Fritz Stahlecker, Josef-Neidhart-Strasse 18, Bad Überkingen, Fed. Rep. of Germany, and Kurt Lang, Lauterstein, Fed. Rep. of Germany, assignors to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 392,596
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1981, 3127415
Int. Cl.³ D01H *1/12*
U.S. Cl. 57—412 20 Claims



1. A feeding and opening device for open-end spinning units, comprising a feeding roller and a feed table resiliently urged against the feeding roller for feeding a sliver to an opening roller that is rotatable about an axis, a separation opening for impurities removed from the sliver arranged in the peripheral

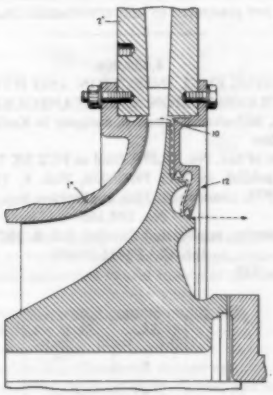
region of the opening roller, the separation opening extending from a guiding edge of the feed table to a guide surface for conduting away said impurities, and a supporting means for supporting the sliver with respect to the opening roller in the zone of the separation opening, the supporting means including at least one mechanical supporting element located at a spacing from the guide edge of the feed table while leaving a free space that is open toward the atmosphere therebetween, and the supporting element having at least one strip located, at a spacing from the guiding edge of the feed table, essentially in parallel to the axis of the opening roller.

4,459,802

BLEEDOFF OF GAS DIFFUSERS IN FLUID FLOW MACHINES

Jan Mowill, Oslo, Norway, assignor to A/S Kongsberg Vapenfabrikk, Kongsberg, Norway

Continuation-in-part of Ser. No. 973,609, Dec. 27, 1978, Pat. No. 4,308,718. This application Oct. 6, 1981, Ser. No. 309,239
Claims priority, application Norway, Jan. 2, 1978, 780010
The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.
Int. Cl.³ F02C 7/00
U.S. Cl. 60—39.02 **6 Claims**



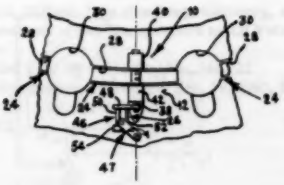
1. In a turbo-machine such as a turbo-charger or a gas turbine engine having a compressor assembly including a compressor diffuser and a labyrinth seal, and a turbine assembly including an exhaust gas diffuser, the improvement comprising an energy conversion means which is operated by a working medium bled from said compressor and supplies energy for removing working medium by suction from a boundary layer or vortex flow in the turbine exhaust diffuser, said energy conversion means comprising a first conduit connected at one end to said labyrinth seal to bleed off gas leaking therethrough at a first pressure and connected at the other end to a pump means to feed said bled gas to said pump means to operate said pump means, and a second conduit connected at one end to the suction line of said pump means and connected at the other end to said boundary layer or vortex flow of said turbine exhaust diffuser.

4,459,803

VARIABLE INLET VANE ASSEMBLY FOR A GAS TURBINE COMBUSTION

Charles Marshall, Stuart, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 19, 1982, Ser. No. 350,493
Int. Cl.³ F02C 9/00, 7/20
U.S. Cl. 60—39.23 **5 Claims**



1. A variable inlet assembly for use within an inlet area of a combustor comprising:

means operably associated with said inlet area of said combustor for defining an opening therein in order to allow gas to flow into said combustor;

means located within said opening for controlling the amount of said gas flowing therethrough, said gas flow control means including a plurality of spaced-apart vanes and means operably connected to each of said vanes for rotatably mounting each of said vanes within said opening within said inlet area of said combustor, said means for mounting each of said vanes including a pair of mounts and a shaft rotatably mounted at both ends thereof within said mounts, said shaft being fixedly secured to said vane at a slight off-center position with respect thereto;

means operably connected to said gas flow control means for moving said vanes to a plurality of positions, said gas flow control moving means including a plurality of crank mechanisms, each of said crank mechanisms having a crank fixedly secured at one end thereof to said shaft, a pair of connecting pins extending substantially perpendicular to said crank forming a space therebetween, and a drive crank, said drive crank having one end thereof within said space and capable of engaging said pair of pins and having the other end operably connected to said synchronous moving means; and

means operably connected to the other end of said drive crank for synchronously moving all of said vanes within said opening;

whereby the control of gas flowing into said combustor significantly improves the relight capability of said combustor.

4,459,804
MULTIPLE SPARK IGNITION INTERNAL COMBUSTION ENGINE WITH EXHAUST GAS RECIRCULATION

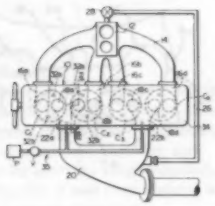
Yasuo Nakajima, Yokosuka; Yoshimasa Hayashi, Yokohama, and Tooru Yoshimura, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 41,989, May 24, 1979, abandoned, and a continuation-in-part of Ser. No. 815,449, Jul. 13, 1977, abandoned, said Ser. No. 41,989, is a continuation of Ser. No. 873,666, Jan. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 790,878, Apr. 26, 1977, abandoned, which is a continuation of Ser. No. 649,231, Jan. 15, 1976, abandoned, said Ser. No. 815,449, is a continuation-in-part of Ser. No. 790,878,. This application Aug. 3, 1981, Ser. No. 289,691

Claims priority, application Japan, Jan. 22, 1975, 50-9454

Int. Cl.³ F02M *25/06*; F02P *15/02*

U.S. Cl. 60—274 **35 Claims**



1. A method of reducing the level of nitrogen oxide emission (NO_x) in the exhaust during operation of a multi-cylinder, spark-ignition, automotive internal combustion engine having a plurality of cylinder bores, in each of which a combustion chamber is defined by a cylinder head and a piston crown, comprising the steps of:

supplying air and fuel comprising gasoline to the combustion chambers at an air-fuel ratio within the range of from about 13:1 to 16:1 to form a combustible air-fuel mixture therein;

recirculating exhaust gases from the engine combustion chambers back to said combustion chambers as a function of the operating conditions of the engine, wherein the amount of exhaust gases recirculated is from about 25 to 40% of the air supplied to each combustion chamber under engine operating conditions of maximum exhaust gas recirculation;

igniting the air-fuel mixture containing the recirculated exhaust gases at a plurality of points in each combustion chamber by a plurality of spark plugs, whereby the air-fuel mixture with exhaust gases therein burn at a rate effective to maintain stable operation of the engine and to maintain the level of nitrogen oxide emissions low with improved fuel economy in comparison with operation of a similar engine with a single spark plug.

4,459,805
COMBUSTION BURNER APPARATUS

Sigeru Kamiya, Chiryu; Shigeru Takagi, Anjo; Masaei Nozawa, Kariya; Masahiro Tomita, Anjo, and Nobutoshi Hayashi, Nishio, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 15, 1981, Ser. No. 302,451

Claims priority, application Japan, Oct. 3, 1980, 55-137734

Int. Cl.³ F01N *3/38, 3/02*

U.S. Cl. 60—303 **9 Claims**

1. A combustion burner for liquid fuel, comprising:

(a) first passageway means for supplying a liquid fuel;

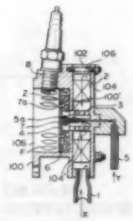
(b) second passageway means for supplying air;

(c) heater means associated with said second passageway means for heating said air passing through said second passageway means;

(d) a mixing chamber communicating with both, said first and said second passageway means, for mixing said liquid fuel and said heated air to generate a mixed gas in said mixing chamber;

(e) a combustion chamber communicating with said mixing chamber;

(f) a trapping vaporizer having labyrinthine passageways for trapping unvaporized fuel in said mixing chamber, and for promoting vaporization of said unvaporized fuel, said



trapping vaporizer having a substantially annular shape and an end face directed toward said combustion chamber, said heated air and said liquid fuel being received radially at an inner peripheral portion of said trapping vaporizer, and expelled axially from said end face;

(g) nozzle means located between said mixing chamber and said combustion chamber for generating flows of said mixed gas directed to the combustion chamber; and,

(h) means arranged in said combustion chamber for igniting said flows of mixed gas from said nozzle means so that flames are generated in said combustion chamber.

4,459,806
GOVERNING FUEL INJECTION AND HYDRAULIC TRANSMISSION SIMULTANEOUSLY

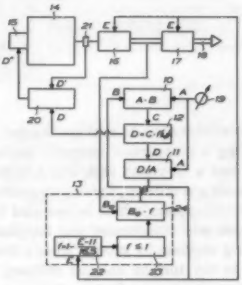
Lars I. Falk, Söderhamn, Sweden, assignor to Kockums Industri AB, Sweden

Continuation of Ser. No. 18,276, filed as PCT SE 78/00015, Jul. 7, 1978, publish as WO 79/00036, Feb. 8, 1979, § 102(e), Mar. 7, 1979, abandoned. This application Sep. 4, 1980, Ser. No. 184,165

Claims priority, application Sweden, Jul. 8, 1977, 7707987

Int. Cl.³ F16H *39/46*

U.S. Cl. 60—327 **4 Claims**



1. In a method of controlling an internal combustion engine having a power control for controlling the rotational speed of the internal combustion engine, and a variable-ratio hydrostatic transmission having an output shaft for providing the power output of the internal combustion engine, said transmission comprising a hydraulic pump driven by the internal combustion engine and at least one hydraulic engine hydraulically

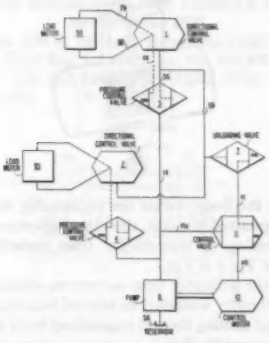
connected to the hydraulic pump, comprising: automatically and constantly adjusting said power control and the value of the ratio of said transmission dependent upon (i) a manually selected desired value of rotational speed of said transmission output shaft and (ii) the measured value of the torque of said transmission output shaft, a first signal being generated for said automatic adjustment of said power control, and a second signal being generated for said automatic adjustment of said ratio of said transmission, the improvement comprising:

generating a third signal which satisfies a predetermined mathematical relationship between said power output provided at said transmission output shaft and the rotational speed of the internal combustion engine, and automatically and constantly controlling said first signal and said second signal dependent upon said third signal.

4,459,807
CONTROL APPARATUS FOR FLUID OPERATED SYSTEMS

Kirk J. Koppen, The Hague, Netherlands, assignor to Koppen and Lethem AG, Cham, Switzerland

Filed Feb. 5, 1982, Ser. No. 346,327
Int. Cl.³ F16H *39/46*
U.S. Cl. 60—452 **10 Claims**



1. A fluid pressure system comprising;

a reservoir (58);

a variable delivery pump (8) having a control member (9) movable to vary the pump output displacement and having an inlet connected to said reservoir (58) and an outlet (14);

a fluid pressure operated control motor (10);

a fluid load motor (94);

a feedback line (111);

a control valve (11) connected to said control motor (10), said pump outlet (14), said reservoir (58) and feedback line (111), said control valve being adapted to control the fluid flow to and from said control motor (10) to vary the pump displacement, to maintain the pressure at said pump outlet (14) a difference above the pressure in said feedback line (111);

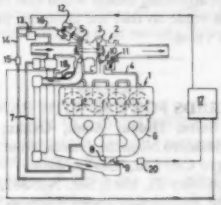
a control valve means (1) adapted to control the fluid flow between said pump outlet (14), said load motor (94) and said reservoir (58), said control valve means further adapted to control the fluid flow between said load motor (94), said reservoir (58) and a control line (44), said control valve means (1) being operable in a neutral position to block off said pump outlet (14) from said load motor (94) and to connect said control line (44) to said reservoir (58), said control valve means (1) being operable to another position which connects said load motor (94) to said control line (44) before said pump outlet (14) is connected to said load motor (94);

a regulating valve (3) connected to and responsive to said control line (44) and adapted to control fluid flow between said pump outlet (14) and said control valve means (1) and to maintain the pressure to the control valve means (1) a difference above the pressure in the load motor (94) and said regulating valve further adapted to provide continuous fluid communication between said control valve means (1) and said feedback line (111) to allow said control valve (11) to operate said control motor (10) to increase (or decrease) the output volume and pressure of said variable delivery pump (8) to a level above that in said load motor (94) before said pump outlet (14) is connected to said load motor (94), and to allow said control valve (11) to reduce the output volume and pressure of said variable delivery (8) when said control valve means (1) is in the neutral position.

4,459,808
SYSTEM FOR CONTROLLING THE CHARGE AIR PRESSURE IN A TURBO-CHARGED COMBUSTION ENGINE

Jan E. Rydquist, Billdal; Lars Sandberg, Göteborg, and Ralf Wallin, Lindome, all of Sweden, assignors to AB Volvo, Göteborg, Sweden

Filed Feb. 16, 1982, Ser. No. 348,722
Claims priority, application Sweden, Feb. 19, 1981, 8101119
Int. Cl.³ F02B *37/12*
U.S. Cl. 60—602 **7 Claims**



1. System for controlling the charge air pressure in a turbocharged combustion engine, comprising control means disposed to limit the charge air pressure to a predetermined level, and means responsive to an increase in load at a certain rate, to actuate the control means to permit an increase in the charge pressure to a maximum level over said predetermined level and, within a certain period thereafter, to actuate the control means to reduce the charge pressure to the predetermined level.

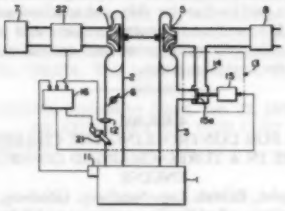
4,459,809
TURBOCHARGER BYPASS CONTROL FOR INTERNAL COMBUSTION ENGINES

Tomoo Tadokoro; Masami Nakao; Haruo Okimoto, and Masato Iwaki, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Feb. 23, 1982, Ser. No. 351,440
Claims priority, application Japan, Feb. 24, 1981, 56-26621
Int. Cl.³ F02B *37/12*
U.S. Cl. 60—602 **7 Claims**

1. An internal combustion engine comprising combustion chamber means, intake passage means leading to said combustion chamber means for supplying intake charge thereto, exhaust passage means leading from said combustion chamber means for passing exhaust gas, supercharging means provided in said intake passage means, exhaust turbine means provided in said exhaust passage means for driving the supercharging means provided in the intake passage means, charging pressure limiting means for limiting charging pressure in said intake passage means downstream of said supercharging means, said charging pressure limiting means including charging pressure adjusting means comprising bypass passage means bypassing

said exhaust turbine means and control valve means for controlling gas flow in said bypass passage means, engine speed sensing means for detecting engine speed and producing an engine speed signal, charging pressure sensing means for detecting the charging pressure in said intake passage means downstream of said supercharging means and producing a charging pressure signal, and control means adapted for receiving said engine speed signal and said charging pressure



signal and producing an output for actuating said adjusting means by providing a limit signal corresponding to a limit value of the charging pressure which decreases in response to an increase in the engine speed above a predetermined engine speed value, and comparing means for comparing said charging pressure signal with said limit signal to provide said output for actuating said adjusting means when said charging pressure reaches the limit value so that the charging pressure does not exceed the limit value.

4,459,810

WORKING FLUIDS FOR USE WITH RANKINE CYCLE

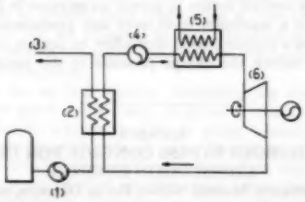
Naonori Enjo, Suita; Hideki Aomi, Osaka; Yuko Harada, Ibaragi, and Masahiro Noguchi, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed May 25, 1982, Ser. No. 381,750

Claims priority, application Japan, May 26, 1981, 56-80533; May 26, 1981, 56-80534

Int. Cl.³ F01K *25/06, 25/10;* **C09K** *5/04*

U.S. Cl. 60—651 **8 Claims**



1. A working fluid suitable for use in a Rankine cycle, said working fluid comprising 5 to 50% by weight of tetrafluoromethane, 40 To 95% by weight of trifluoromethane and 0 to 10% by weight of monochlorodifluoromethane.

4,459,811

MAGNETIC REFRIGERATION APPARATUS AND METHOD

John A. Barclay; William C. Overton, Jr., and Walter F. Stewart, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

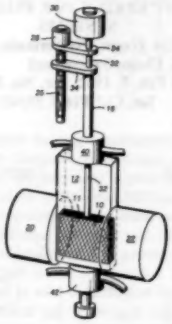
Filed Mar. 28, 1983, Ser. No. 479,596

Int. Cl.³ F25B *21/02*

U.S. Cl. 62—3 **20 Claims**

1. A method of refrigeration approximating a Brayton cycle utilizing near its Curie temperature, a ferromagnetic body which is geometrically structured to undergo magnetization and demagnetization in accordance with its orientation in a magnetic field, said body being rotatable about an axis substantially perpendicular to the field between substantially magnetized and substantially demagnetized positions, and an internal heat exchange fluid containing regenerator slidably positioned about the body along the axis between a bottom position and a top position and thermally communicating with two external heat exchange transfer fluids, the method comprising the steps of:

(a) positioning the regenerator and body in a substantially demagnetized orientation within the field at a temperature essentially T_H, the body being oriented so that its demagnetizing factor due to its geometric structure is near unity, the regenerator being in its bottom position;



(b) rotating the body within the regenerator to a substantially magnetized position, thereby magnetizing the body and increasing its temperature from essentially T_H to essentially $T_H + \Delta T_H$;

(c) moving the generator from its bottom position to its top position, thereby warming the internal heat exchange fluid therein and cooling the still magnetized body to a temperature of essentially T_C;

(d) again rotating the body within the regenerator to a substantially demagnetized position to adiabatically demagnetize the body from its temperature of essentially T_C to a temperature of essentially $T_C - \Delta T_C$;

(e) moving the regenerator to its bottom position to cool the internal heat exchange fluid therein and warm the body to essentially T_H; and

(f) transferring heat from the internal heat exchange fluid appropriately during the cycle to two external heat exchange transfer fluids to accomplish refrigeration.

4,459,812

METHOD AND APPARATUS FOR LIQUID FREEZING

John P. Norton, Creve Coere, Mo., assignor to Engineered Air Systems, Inc., St. Louis, Mo.

Filed Mar. 10, 1983, Ser. No. 474,164

Int. Cl.³ F25C *1/00*

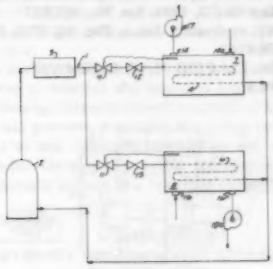
U.S. Cl. 62—75 **3 Claims**

1. A method for rapidly freezing a liquid medium comprising reducing the temperature of a first liquid cooling medium in a first cooling zone maintained at a temperature slightly above the freeze point of said liquid cooling medium to bring said first medium into a slush-like state;

introducing said slush-like medium into a first heat transfer chamber;

and introducing said first heat transfer chamber containing said slush-like medium to a second cooling zone, said second cooling zone being immersed within said slush-like

medium in said first heat transfer chamber and maintained at a temperature below the freeze point of said liquid



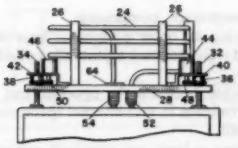
cooling medium in said chamber to bring said first medium rapidly into a frozen state.

4,459,813

LEVELLING APPARATUS FOR VEHICLE MOUNTED REFRIGERATOR

John R. Petta, 820 E. 7th Ave., Escondido, Calif. 92025

Filed Sep. 13, 1982, Ser. No. 416,878
Int. Cl.³ F16M *1/00*; F25D *19/00*
U.S. Cl. 62—132 **10 Claims**



1. In a refrigerator including a chassis and a refrigerator unit having a separately moveable condensing coil, a levelling apparatus for levelling solely the separately moveable condenser coil relative to the chassis and refrigerator unit comprising:

a support frame mounted in a generally horizontal plane on said chassis;

a movable condenser coil separately and exclusively mounted on said support frame and separately and exclusively moveable with said frame relative to said chassis and refrigerator unit;

a pivot support unit for supporting said frame on said chassis for pivotal movement relative to said chassis about substantially orthogonal axis;

a first elevating support unit spaced from said pivot support unit for pivoting said support frame about a first axis; and,

a second elevating support unit spaced from said pivot support unit for pivoting said support frame about a second axis substantially orthogonal to said first axis.

4,459,814

THERMAL ENERGY COMPRESSION SYSTEM FOR HEAT PUMPS

Walter J. Schaetzle, 9 Oak Bluff, Northport, Ala. 35476

Filed Nov. 2, 1981, Ser. No. 317,192
Int. Cl.³ F25B *7/00*
U.S. Cl. 62—175 **10 Claims**

1. An intermittent compression unit for use in a refrigeration system utilizing a refrigerant, comprising:

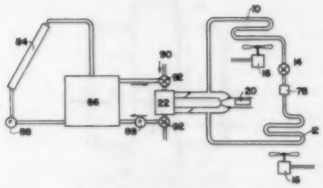
a fluid passage means;

first compressor means in communication with said fluid passage means;

second compressor means operatively associated with said first compressor means and said fluid passage means and which further comprises a container having an inlet and an outlet and having a first and second flow passage formed therein;

sieve means disposed in said container;

passage means operatively associated with said container for



communicating said refrigerant to said inlet and from said outlet of said container;

check valve means mounted in said passage means for controlling said communication of refrigerant into and out of said sieve via said inlet and outlet, respectively;

means for selectively controlling communication of said fluid passage to said first or second compressor; and

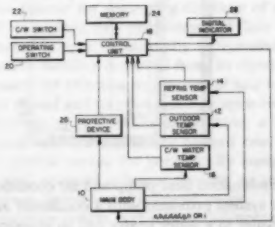
means for selectively controlling flow of fluid from said fluid passage means to said first or second flow passage in said container.

4,459,815

AIR CONDITIONER

Seishi Yokoyama, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1982, Ser. No. 366,416
Claims priority, application Japan, Apr. 7, 1981, 56-53478
Int. Cl.³ F25D *17/00*; F25B *47/00*; G05D *23/00*; E03B *7/10*
U.S. Cl. 62—180 **2 Claims**



1. An air conditioner comprising: a main body including a plurality of ventilating fans, a plurality of refrigerant compressors and a cooling/warming water pump; a first means for successivley starting said plurality of ventilating fans and said plurality of refrigerant compressors; a second means for sensing a cooling/warming water temperature, and for effecting a volume control by changing the number of said plurality of compressors which are in operation in accordance with said sensed water temperature and for controlling the rotational operation of said plurality of compressors in order to minimize differences in operating times of said plurality of compressors due to the volume control so as to thereby prevent said plurality of compressors from being operated in short cycles; a third means for sensing an outdoor temperature and for changing the number of said plurality of ventilating fans which are in operation in response to said sensed outdoor temperature; a fourth means for sensing if frost is attached to an air coil means by

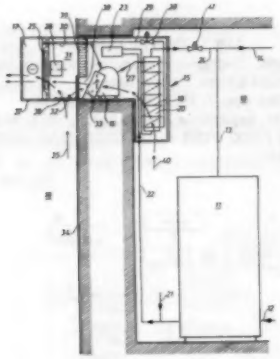
sensing both an outdoor temperature and a refrigerant temperature and for completing a defrosting operation; a fifth means which is responsive to a command suspension signal to suspend the operation of said air conditioner after the completion of said defrosting operation; and a sixth means for sensing an outdoor temperature and a cooling/warming water temperature during said suspension of operation of said air conditioner and for operating and suspending said pump in response to said sensed temperatures so as to thereby prevent said pump and its associated water piping from freezing.

4,459,816

HEAT PUMP

Hans G. Lung, Bjärred, and Lars B. I. Persson, Teckomatorp, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Mar. 9, 1981, Ser. No. 241,622
Claims priority, application Sweden, Mar. 17, 1980, 8002064
Int. Cl.³ F25B *39/04, 27/02*
U.S. Cl. 62—183 **4 Claims**



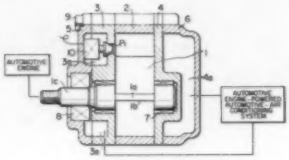
1. In a combination heat pump and air conditioner having a compressor system provided with a condenser arranged to be cooled by water in a water heater and an evaporator arranged to be heated by air, a reversible fan positioned in an intermediate fan space, said air being blown by said fan through said evaporator, an air path for ambient air or an air path for room air which are alternately and selectively connected to said fan space, the improvement comprising: said intermediate fan space having separate openings therein constituting said air path for ambient air and said air path for room air, said evaporator being located downstream of said intermediate fan space, a movable control means located between said fan space and said two air paths for connecting selectively one or the other of said air paths to said fan space, and when said control means is in a first position the fan is arranged to blow air from one of the air paths with ambient air through the evaporator and operating in one direction, and when said control means is in a second position said fan blows air from the other of said air paths with room air through said evaporator, with the fan operating in the opposite direction.

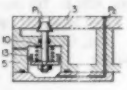
4,459,817

ROTARY COMPRESSOR

Mitsuo Inagaki; Seitoku Ito, and Takao Kasagi, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 2, 1981, Ser. No. 307,937
Claims priority, application Japan, Dec. 16, 1980, 55-178359; Jan. 22, 1981, 56-8167
Int. Cl.³ F25B *41/00*; F04B *49/08*
U.S. Cl. 62—196.3 **2 Claims**





1. A rotary compressor, comprising:

a housing having an outer peripheral liner wall and two opposite end walls defining a generally cylindrical internal space;

a rotor journalled between the opposite end walls of the housing for rotation in said internal space eccentrically of said liner wall;

said rotor having at least two angularly spaced vanes radially movably mounted thereto and in contact with said liner wall so that as the rotor rotates a working space defined between said vanes, liner wall and two opposite end walls is gradually decreased when passing angularly from a filling position towards a discharge position which is non-overlapping with said filling position and thereafter increases when passing angularly from the discharge position into the filling position;

the housing further including means defining a suction chamber constructed and arranged to receive spent gaseous refrigerant in an automotive engine-powered automotive air conditioning system which is subject to varying cooling loads depending in part on whether the ambient air is hot and the automotive engine is turning relatively slowly, either of which are high load conditions, or the ambient air is cool and the automotive engine is turning relatively fast, either of which are low load conditions;

means defining a suction port communicating the suction chamber with said internal space in said filling position of said working space of said rotor;

means defining a discharge port communicating through the housing with said internal space in said discharge position of said working space of said rotor, for discharging gaseous refrigerant which has been compressed in said working space so as to provide working fluid for a refrigeration cycle;

means defining an unloading port for communicating between the suction chamber and the internal space angularly between said filling position and said discharge position of said working space and partially overlapping with said filling position angularly of said internal space, so as to effectively extend said filling position when said unloading port is open;

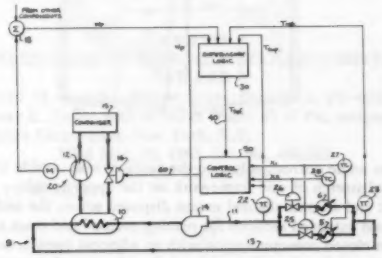
a valve juxtaposed with said unloading port and being constructed and arranged for opening-up and closing-down said unloading port so as to influence how much of said spent gaseous refrigerant is in said working space when said working space is at last cut off from communication with said suction chamber in each cycle of rotation of said rotor; and

pressure sensing means constructed and arranged to be responsive to whether the engine-powered automotive air conditioning system is subject to a high or low load condition, said pressure sensing means being operatively connected to said valve for opening-up the unloading port only when the engine-powered automotive air conditioning system is subject to a low load condition.

4,459,818
SUPERVISORY CONTROL OF CHILLED WATER TEMPERATURE

Azmi Kaya, Akron, and Michael S. Willey, Chagrin Falls, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed May 26, 1983, Ser. No. 498,376
Int. Cl.³ F25D *17/02*; F25B *41/04*
U.S. Cl. 62—201 **10 Claims**



1. An arrangement for the optimized control of chilled water temperature supplied to at least one process by pump means, the water being chilled by coolant in a coolant cycle having compressor means and load valve means, comprising:

a first temperature sensor for sensing a supply temperature of the water to the process;

a second temperature sensor for sensing a return temperature of water from the process;

work determining means connected to the pump and compressor means for determining a total amount of work needed to chill and supply water to the process;

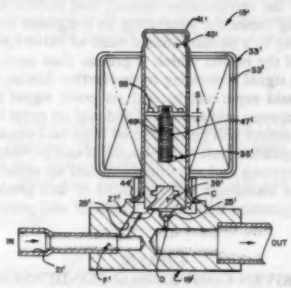
supervisory control means connected to said first and second temperature sensors and said work determining means for generating a reference temperature which is a function of supply temperature and the ratio $\Delta W/\Delta(\Delta T)$ where ΔW is a change in the total amount of work with time and $\Delta(\Delta T)$ is a change in the difference between supply and return temperature, the reference temperature being equal to the supply temperature when the ratio is approximately zero, being less than the supply temperature when the ratio is negative and being more than the supply temperature when the ratio is positive; and

temperature control means connected to said supervisory control means for receiving the reference temperature, said temperature control means being connected to said first temperature sensor for receiving the supply temperature, to the process for receiving a demand value and to the load valve means, for controlling the load valve means according to a load demand signal which corresponds to the difference between the supply temperature and the lowest of the reference temperature and the demand value.

4,459,819
PULSE CONTROLLED EXPANSION VALVE AND METHOD

David P. Hargraves, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 354,136, Mar. 5, 1982. This application Nov. 1, 1982, Ser. No. 438,405
Int. Cl.³ F25B *41/04, 41/06*; F16K *31/02*
U.S. Cl. 62—212 **17 Claims**



1. Apparatus for controlling a refrigeration system, the latter comprising a compressor having an inlet and an outlet, a condenser connected to the outlet of the compressor, an evaporator connected to said condenser and to the inlet of said compressor, an expansion valve between said condenser and said evaparator, said condenser delivering high pressure liquid refrigerant to said expansion valve, said apparatus comprising a solenoid valve constituting said expansion valve, said solenoid valve having a valve body with a flow passage therewithin for the flow of refrigerant therethrough, a valve seat constituting a portion of said flow passage, a valve member selectively movable between a closed position in which it is sealingly engageable with said valve seat so as to block the flow of refrigerant through said flow passage and an open position in which said valve member is clear of said valve seat permitting the flow of refrigerant through said flow passage, said flow passage downstream from said valve seat having a metering orifice therein for restricting the flow of refrigerant through said flow passage to a predetermined flow rate when said valve member is open substantially independently of the distance said valve member is moved from its closed position, a solenoid actuator for effecting movement of said valve member between its closed and its open position upon energization and de-energization of said solenoid actuator, a spring for resiliently biasing said valve member toward one of its said positions, and control means for periodically energizing and de-energizing said solenoid actuator thereby to regulate the flow of refrigerant through said solenoid valve.

9. In a refrigeration system comprising a compressor having an inlet and an outlet, a condenser connected to the outlet of the compressor, an evaporator connected to said condenser and to the inlet of said compressor, an expansion valve between said condenser and said evaporator, said condenser delivering high pressure liquid refrigerant to said expansion valve, said refrigerant expanding as it flows through said expansion valve, wherein the improvement of this invention comprises: said expansion valve being a solenoid operated valve having a valve body with a flow passage therewithin for the flow of refrigerant therethrough, a valve seat constituting a portion of said flow passage, a valve member selectively movable between a closed position in which it is sealingly engageable with said valve seat so as to block the flow of refrigerant through said flow passage and an open position in which said valve member is clear of said valve seat permitting the flow of refrigerant through said flow passage, a solenoid actuator for effecting movement of said valve member between its closed and its open position upon energization and

de-energization of said solenoid actuator, a spring for resiliently biasing said valve member towards its closed position, and control means for periodically energizing and de-energizing said solenoid actuator with the ratio of open time to the length of the period of said valve being responsive to one or more parameters of said refrigeration system thereby to regulate the flow of refrigerant through said expansion valve, said control means including means for sensing the superheat of the refrigerant discharged from said evaporator, means for generating a setpoint signal T_2 representative of a desired operating condition of the refrigeration system, said control means further including means for generating an integrator count signal corresponding to a predetermined ratio of valve open time to the length of the period which is greater than zero, said integrator count signal generating means further having means for comparing said superheat to said set point signal and if the difference between said superheat and said set point is less than zero, an increment will be subtracted from said predetermined ratio of energization time to the length of said period, and if the difference between said superheat and said set point is greater than zero, an increment will be added to said predetermined ratio of energization time to the length of said period.

4,459,820

MOTOR-DRIVEN COMPRESSOR-CONDENSER GROUP FOR COOLING CYCLES

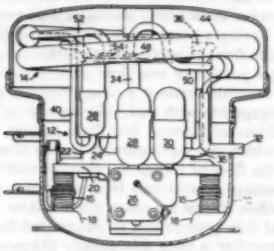
Giorgio G. Giuffrida, Pavia, Italy, assignor to NECCHI Societa per Azioni, Pavia, Italy

Filed Jul. 1, 1982, Ser. No. 393,888

Claims priority, application Italy, Jul. 13, 1981, 42914 A/81

Int. Cl.³ F25B *27/02*

U.S. Cl. 62—238.6 **1 Claim**



1. A motor-driven compressor-condenser group for cooling cycles, comprising a hermetically sealed refrigerant container, a condenser comprising a heat exchanger, a motor and a motor-driven compressor, said condenser, motor and compressor being mounted witin said container, said condenser being in close proximity to the compressor, including a counter currently fluid flowing apparatus concentrically mounted about said heat exchanger and within said container and having an inlet and outlet external of said container so that the discharge heat of the cooling liquid of the heat exchanger connected to the condenser is recovered, in domestic cooling apparatuses, to heat water.

4,459,821

BEVERAGE VEHICLE BULKHEAD AND METHOD OF CONSTRUCTING SAME

Paul C. Cabell, and Robert L. Kimmich, both of Johnson County, Kans., assignors to The Hesse Corporation, Kansas City, Mo.

Filed Aug. 2, 1982, Ser. No. 404,604

Int. Cl.³ B60H *3/04*

U.S. Cl. 62—239 **4 Claims**

1. A bulkhead for the cargo area of a cargo carrying vehicle, said bulkhead comprising:

a framework extending around the periphery of said cargo area and in a transverse dimension, said framework presenting outside vertical stretches and a horizontal stretch;

an A-frame section disposed in the center of said cargo area and dividing the latter into left and right sections,

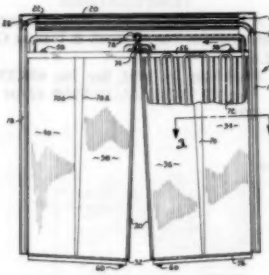
each of said left and right sections having a floor sloping toward the center of said area;

first and second uniform extruded sections each presenting alternating web portions and open areas sandwiched between generally planar surfaces,

said first and second extruded sections being disposed on one side of said A-frame section;

first plate connecting means interposed between said first and second extruded sections and presenting first and second connecting surfaces aligned with said planar surfaces,

said connecting surfaces being disposed at an angle corresponding to the angle of said A-frame on one side and at



an angle corresponding to the angle of said outside vertical stretch of said framework on the opposite side;

first and second channel means disposed across the ends of said extruded sections for placing each of said open areas in closed communication with an adjacent open area;

third and fourth uniform extruded sections each presenting alternating web portions and open areas sandwiched between generally planar surfaces;

said third and fourth extruded sections being disposed on the other side of said A-frame section;

second plate connecting means interposed between said third and fourth extruded sections and presenting third and fourth connecting surfaces aligned with said planar surfaces of said third and fourth extruded sections; and

third and fourth channel means disposed across the ends of said third and fourth extruded sections for placing each of the open areas of said sections in closed communication with an adjacent open area.

4,459,822

COOLING SUIT SYSTEM AND HEAT EXCHANGER CONSTRUCTION

Adalbert Pasternack, Bad Schwartau, Fed. Rep. of Germany, assignor to Drägerwerk A.G., Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,141

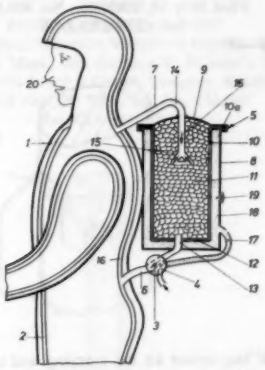
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1981, 3102443

Int. Cl.³ F25D *23/12*

U.S. Cl. 62—259.3 **6 Claims**

1. A cooling suit syxtem, comprising a suit adapted to be worn by a person having a cooling media flow conduit associated therewith, a heat exchanger associated with said suit having a housing, a coolant media inlet connected into said housing from said flow conduit, a coolant media discharge connected from said housing back to said flow conduit downstream of said coolant media inlet; a flexible insert in said housing connected to said inlet and to said outlet and containing a cooling media comprising meltable solid pieces, said

insert elastically tightly engaging said pieces, said housing defining a pressurizable space surrounding said insert, a pump



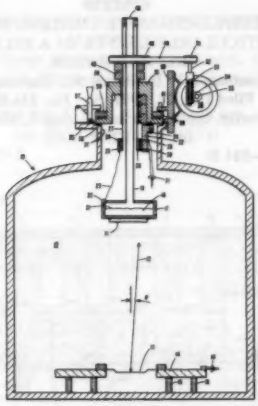
for air connected into said housing into the space surrounding said insert to pressurize said space.

4,459,823

ROTATING LIQUID NITROGEN COOLED SUBSTRATE HOLDER

Richard M. Josephs, Willow Grove; Ronald A. Flowers, and Peter L. Young, both of North Wales, all of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,522
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—268 **9 Claims**



1. Apparatus for rotating a substrate in a vacuum chamber at cryogenic temperatures, comprising:

a vacuum chamber,

a top on said vacuum chamber,

an aperture in said top of said vacuum chamber,

a closure mounted on said aperture of said top of said vacuum chamber,

magnetic means fixed in a recess in said closure,

said magnetic means comprising a plurality of annular shaped magnets,

a thin wall hollow metal tube mounted through the center of said magnets for rotary movement relative thereto,

ferro-fluid seal means intermediate said magnets and said thin wall hollow tube,

a work station mounted on one end of said thin wall hollow tube and cooperating therewith,

said work station comprising a hollow chamber adapted to receive cold-liquified gas at cryogenic temperatures therein,

said work station having means for holding a work piece thereon in close proximity to said cold-liquified gas in said hollow chamber of said work station, and

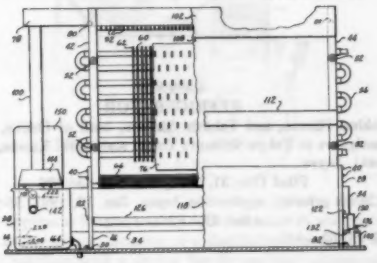
drive means coupled to said thin wall hollow tube for rotating said thin wall hollow tube and said work station while maintaining said work station hollow chamber below 100° Kelvin and said ferro-fluid seal above freezing temperature.

4,459,824

ICE CUBE MAKING APPARATUS

Harvey R. Krueger, Sleepy Hollow, Ill., assignor to Reynolds Products Inc., Schaumburg, Ill.

Filed Aug. 26, 1982, Ser. No. 411,644
Int. Cl.³ F25C *1/12*
U.S. Cl. 62—347 **8 Claims**



6. Ice cube forming apparatus including in combination, respective first and second generally vertically disposed water barriers of thermally insulating material located on opposite sides of a central vertical plane, a generally vertically disposed array of fins of thermally conductive material, said array including a first plurality of fins extending outwardly from a first side of said plane through said first barrier and terminating at a predetermined distance from the other side of the first barrier to provide a plurality of discrete first freezing elements around which ice may form and a second plurality of fins extending outwardly from a second side of said plane through said second barrier and terminating at a predetermined distance from the other side of the second barrier to provide a plurality of discrete second freezing elements around which ice may form, means for distributing water over the portions of said fins on the other sides of said barriers, means disposed between said barriers for cooling said fins during an ice-forming period to cause cubes of ice to from on said fins, and means for harvesting said cubes at the end of said ice-forming period.

4,459,825

APPARATUS FOR CONTROLLED REDUCTION IN TEMPERATURE AND PRESERVATION OF EMBRYOS IN A CRYOGENIC STATE

Michael D. Crouch, P.O. Box 45140, Baton Rouge, La. 70895

Filed Jul. 29, 1982, Ser. No. 402,840
Int. Cl.³ F25D *17/04*
U.S. Cl. 62—404 **15 Claims**

1. Cryogenic apparatus for reducing the temperature of embryos and the like whereby to freeze the embryos at a controlled and predetermined rate, comprising:

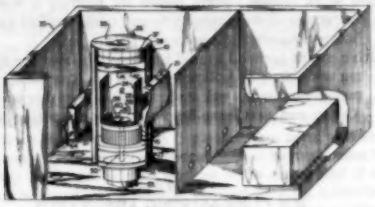
a housing defining a sealed cooling chamber therein;

support means for removably suspending said embryos in said sealed cooling chamber;

gaseous medium circulating means in said cooling chamber for recirculating a gaseous medium along a closed path

through said chamber with said embryos disposed in the path of circulation of said gaseous medium; and

heat exchange means including heat transfer elements positioned in the path of flow of said gaseous medium through



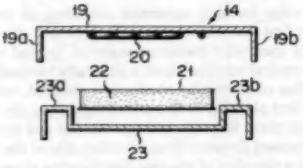
said chamber, and temperature control means for regulating the rate of heat transfer and thus the cooling rate of said gaseous medium being circulated through said chamber for reduction of the temperature at a predetermined rate to a level below 0° C.

4,459,826

REFRIGERATOR

Yoshimi Hirano, and Takashi Shigeta, both of Osaka, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 31, 1981, Ser. No. 336,406
Claims priority, application Japan, Jan. 19, 1981, 56-5927
Int. Cl.³ F25D *11/00*
U.S. Cl. 62—430 **3 Claims**



1. A refrigerator comprising:

a refrigerator box partitioned into a freezing chamber, refrigerating chamber and cooling chamber communicating with the freezing and refrigerating chambers;

a first cooling device disposed in the freezing chamber

a fan device mounted in the cooling chamber to cause air in the freezing and refrigerating chambers to be circulated;

a second cooling device communicating with the first cooling device to permit cooling of the circulating air at arranged so as to operate during a cooling operation at a temperature lower than that of the first cooling device;

heating means, provided on the second cooling device only; and

cold storage means provided in proximity to the first cooling device, for minimizing a temperature rise of said first cooling device during a defrosting of said refrigerator that would otherwise occur by convection of heat from outside the refrigerator and a backflow of coolant into said first cooling device,

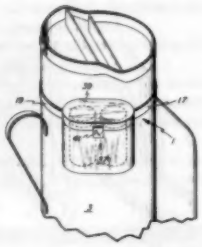
said first cooling device having a heat transfer plate with which an evaporator is meanderingly contacted, and a cover confronting the heat transfer plate on the evaporator side and fitted into the heat transfer plate with said cold storage means held therebetween and wherein said cold storage means has a flexible container and a cold storage agent sealed in the container.

4,459,827

GOLF BAG COOLER KIT

Duane C. Rhodes, 19 Yost St., Johnstown, N.Y. 12095

Filed May 19, 1983, Ser. No. 496,006
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—457 **10 Claims**



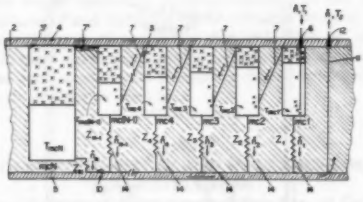
1. A golf bag cooler kit for carrying and cooling canned beverages; said kit comprising a belt and mounting plate assembly, and a cooler, said belt and mounting plate assembly having belt straps for training around a golf bag and means for adjustably tightening together said belt straps on said gold bag and securing same together, said cooler having compartments for receiving therein beverage cans, said belt and mounting plate assembly having a mounting plate, said cooler having a spring-clip assembly in fixed relationship therewith, said spring-clip assembly being engageable with said mounting plate to releasably lock together said spring-clip assembly and mounting plate, and to thereby releasably mount said cooler on the golf bag.

4,459,828

MULTIPLE-CHAMBER COOLING DEVICE PARTICULARLY USEFUL IN A DILUTION REFRIGERATOR

Ralph L. Rosenbaum, 17 Hashalom St., Raanana, Israel

Filed Dec. 24, 1981, Ser. No. 334,180
Claims priority, application Israel, Aug. 6, 1981, 63517
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 R **12 Claims**



1. A multiple-chamber cooling device particularly useful in a dilution refrigerator in which a working liquid is passed successively through a plurality of chambers in each of which a fraction of the working liquid is allowed to evaporate to cool the remaining working liquid, characterized in that said cooling device comprises a common body member of a material having low thermal conductivity at the operating temperature of the cooling device; said common body member being formed with a plurality of spaced bores each defining one of said chambers and having an inlet end and an outlet end; the bore defining the first of said chambers including an inlet for the working liquid; the outlet end of each chamber bore being connected by a passageway to the inlet end of the adjacent bore for passing the working liquid from one to the next cham-

ber bore as a fraction of the working liquid is evaporated to cool the remainder.

4,459,829

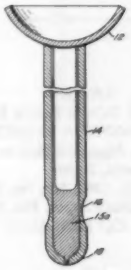
RIGIFIED EARRING POST

Armand C. Richard, Plainville; Michael A. Gayton, North Attleboro, both of Mass., and Anthony F. D'Ambra, Greenville, R.I., assignors to Leach & Garner Company, Attleboro, Mass.

Filed Nov. 29, 1982, Ser. No. 445,059

Int. Cl.³ A44C *7/00*

U.S. Cl. 63—12 **2 Claims**



1. An earring post comprising a hollow precious metal tubular member having an open end and a closed radiused end, at least one notch formed inwardly in the wall of the member to receive a clutch, said member having a gold solder solid interior from the radiused end to a point beyond the notch to support the post along the notched area whereby the closed end of the post is rigidified.

4,459,830

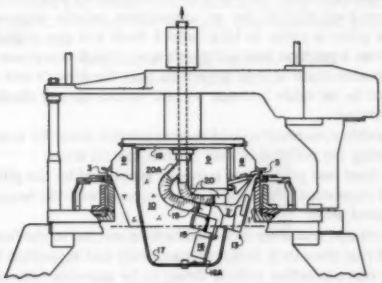
YARN CLIPPING DEVICE FOR CIRCULAR KNITTING MACHINES

Koji Tsuchiya, Hyogo, Japan, and David Pernick, Kings Point, N.Y., assignors to Monarch Knitting Machinery Corporation, Glendale, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,098

Int. Cl.³ D04B *15/61, 35/00*

U.S. Cl. 66—140 S **2 Claims**



1. An attachment for use with multi-feed circular knitting machines of the type having yarn changing striper boxes at the feeds thereof to change and to cut and clamp the yarns fed to and knit by the machine during the making thereon of coursewise striped tubular fabric and in which such action by the striper boxes results in undesirably long unknit terminal portions of the changed yarns which have cut ends and which extend inwardly from the inner side of the tubular fabric being made, the attachment comprising a device having yarn clipping means disposed within the tubular fabric in such manner that the yarn clipping means is positioned to cut and to shorten the terminal portions of the changed yarns as the tubular fabric continues to be made, whereby the yarns are cut firstly by the striper boxes and secondly by the yarn clipping means.

4,459,831

APPARATUS FOR PREVENTING A CONTAMINATION OF THE AMBIENT AIR DURING AN EMPTYING AND CLEANING OF THE DISTILLATION VESSEL OF DRY CLEANING APPARATUS

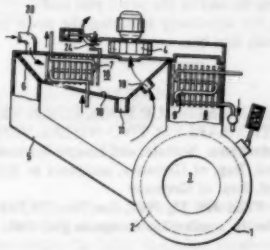
Vittorio Grandi, S. Giorgio Di Piano, Italy, assignor to Multimatic-Maschinen GmbH. & Co., Melle, Fed. Rep. of Germany

Filed Jun. 15, 1982, Ser. No. 388,585

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1981, 3123792

Int. Cl.³ D06F *43/08*

U.S. Cl. 68—18 R **7 Claims**



1. An apparatus for preventing contamination of ambient air during discharge and cleaning of a distillation vessel of a dry cleaning machine with a drying fan for sucking solvent-containing air, said apparatus comprising:

a plurality of conduits connected at a first end to said distillation vessel through which said solvent-containing air is sucked, said conduits connected at a second end to said fan;

a plurality of valves, each located in a particular one of said plurality of conduits for initiating the flow of said solvent-containing air from said distillation vessel through said conduits; and

exhaust means for purifying said solvent-containing air sucked through said conduits by said fan.

4,459,832

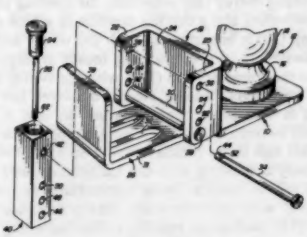
TRAILER HITCH LOCK

Walter C. Avrea, 1405 Whalers Way, Tempe, Ariz. 85283, and William C. Neils, 540 W. Rose La., Phoenix, Ariz. 85013

Filed Mar. 22, 1982, Ser. No. 360,795

Int. Cl.³ E05B *67/36, 73/00*

U.S. Cl. 70—14 **17 Claims**



1. A lock module for positionally locking in place a pivot and retaining pin attached coupling guard of a ball and socket

trailer hitch by receiving an end of at least the retaining pin of the coupling guard, said lock module comprising in combination:

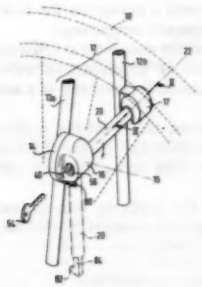
(a) a lock having a plurality of laterally extendable tumblers;
(b) a lock pin attached to and extending from said lock;
(c) a bar for removably receiving said lock and lock pin, said bar including a first longitudinally oriented cavity for receiving said lock pin, a second longitudinally oriented cavity for recieving said lock means for precluding withdrawal of said lock and attached lock pin except upon retraction of the tumblers;
(d) a laterally oriented cavity disposed in said bar for receiving the end of the retaining pin, which received end includes a cabity extending therethrough, said laterally oriented cavity being located to intersect with and position said retaining pin cavity coincident with said first longitudinally oriented cavity for penetrable engagement by said lock pin upon insertion of said lock and lock pin within said bar;
(e) a further laterally oriented cavity disposed in said bar for receiving an end of the pivot pin; and
(f) means for selectively retaining the pivot pin in engagement with said bar.

4,459,833

SWIVELING STIRRUP LOCK FOR A VEHICLE, PARTICULARLY A TWO-WHEEL VEHICLE

Manfred Waterkamp, Nottuln, and Ludger Kortenbrede, Telgte, both of Fed. Rep. of Germany, assignors to Aug. Winkhaus, Telgte, Fed. Rep. of Germany

Filed Jul. 23, 1981, Ser. No. 285,991
Claims priority, application European Pat. Off., Feb. 2, 1981, 81100740.0
Int. Cl.³ B60R *25/00*; E05B *71/00*
U.S. Cl. 70—227 **58 Claims**



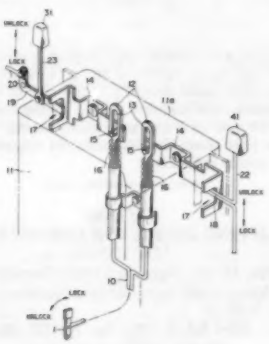
1. A swiveling stirrup lock for a vehicle, particularly a two-wheel vehicle, comprising an axially elongated swiveling stirrup (20) which is supported at a frame portion (12*a*) laterally next to a wheel (10) provided with an opening and is swingable about a swivel axis (18) between a locking position in which said swiveling stirrup (20) penetrates the opening and is locked against swiveling and a driving position in which said swiveling stirrup (20) is not engaged with the wheel and is secured against swiveling, a pivot bearing means arranged to be attached to the frame portion (12*a*) with the swivel axis passing through said pivot bearing means, a swivel hub swingably mounted in said pivot bearing means so that it can swing around the swivel axis, said swiveling stirrup (20) is mounted in said swivel hub to be rotatable about an axis of rotation (22) substantially coinciding with the longitudinal axis of the stirrup, said axis of rotation being substantially perpendicular to said swivel axis, said swiveling stirrup includes a securing element (72), said pivot bearing means including a securing element receiving means (66), said swiveling stirrup is secured at least in said driving position by the engagement of said securing element (72) in said securing element receiving means, engagement and disengagement of said securing element (72) into and out of said securing element receiving means (66) being responsive to the rotation of said stirrup (20) about the axis of rotation thereof in opposite directions respectively, characterized in that said securing element (72) projects outwardly from the outer surface of said swivel hub, said pivot bearing means includes a plate member (14) extending substantially transversely of said swivel axis (18) and adjacent said swivel hub (16), and said securing element receiving means (66) located on said plate member (14) and extending in the axial direction of said swivel axis.

4,459,834

REMOTE CONTROL DOOR-LOCK DEVICE FOR AN AUTOMOTIVE VEHICLE

Shojiro Seki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 22, 1982, Ser. No. 341,791
Claims priority, application Japan, Feb. 5, 1981, 56-14346[U]
Int. Cl.³ E05B *65/12*
U.S. Cl. 70—256 **6 Claims**



1. A remote control door-lock device connected to front and rear door lock devices for an automotive vehicle disposed within a pillar in order to lock/unlock front and rear vehicle doors from a position near a driver's seat, which comprises:

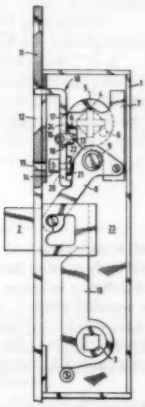
(a) a remote control lever supported near the driver's seat so as to be movable between locked, unlocked, and neutral positions;
(b) a cable connected to said remote control lever for transmitting the position of said remote control lever;
(c) at least one guide plate movably supported by the pillar and connected to said cable, so as to move with the remote control lever;
(d) front and rear door lock members connected to the front and rear door lock devices respectively and supported by the corresponding vehicle doors to be movable between locked and unlocked positions;
(e) at least one actuation member pivotably supported by the pillar and engaged with said guide plate and with said door lock member with some mutual free travel, said actuation member being movable by said guide plate from the neutral position to the lock position to lock the doors when said front and rear door lock members are in the unlocked position and movable by said guide plate from the lock position, through the neutral position, to the unlock position to unlock the doors when said front and rear door lock members are in the lock position.

4,459,835

MULTI-FUNCTION LOCK

Oiva Hurskainen, Joensuu, Finland, assignor to Oy Wartsila Ab, Helsinki, Finland

Filed Mar. 19, 1982, Ser. No. 359,847
Claims priority, application Finland, Mar. 25, 1981, 810912
Int. Cl.³ E05B 55/04, 65/06
U.S. Cl. 170—486 15 Claims



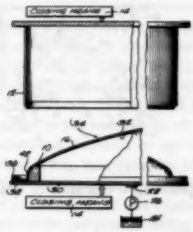
1. A door lock comprising a lock bolt reciprocatingly movable between a protruding locking position and a retracted inactive position, means for locking said lock bolts in its protruding position, means for keeping said lock bolt in its retracted position, means for operating said lock bolt from a handle or the like as well as by means of a key operated mechanism, and a lock function selector for setting a desired lock function, said lock selector having three different setting positions of which each determines a specific type of lock function, a setting restricting member, by means of which the setting of said lock function selector is restrictable to exclude at least one of its lock function settings.

4,459,836

HYDRAULIC FORMING PROCESS AND APPARATUS

William K. Thomas, P.O. Box 472, Deer Lake Rd., Tomahawk, Wis. 54487

Filed Jan. 21, 1982, Ser. No. 341,382
Int. Cl.³ B21D 22/10
U.S. Cl. 72—61 9 Claims



1. In a die set for forming a skirt on a workpiece without pleating it, comprising a male die, a mating annular female die, and closing means to bring said dies together with sufficient force to form a skirt on a workpiece positioned between said dies;

the improvement comprising a first annular drawbar extending axially toward said female die and spaced radially outside the work piece engaging surface of said dies;

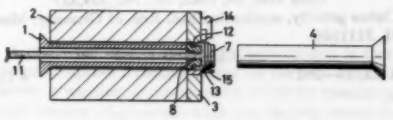
whereby to support the portion of said workpiece lying outside the outer margin of said female die as said closing means is operated to form said skirt, thus causing said workpiece to be rolled radially outward about said male die.

4,459,837

METHOD OF INDIRECT EXTRUSION OF METAL

Hiromasa Hayashi, and Eiichi Mohri, both of Nagoya, Japan, assignors to Sumito Light Metal Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP81/00114, 371 Date Jan. 13, 1982, 102(e) Date Jan. 13, 1982, PCT Pub. No. WO81/03441, PCT Pub. Date Dec. 10, 1981
PCT Filed May 26, 1981, Ser. No. 346,077
Claims priority, application Japan, May 26, 1980, 55-69964
Int. Cl.³ B21C 25/02, 35/04, 35/06
U.S. Cl. 72—255 8 Claims



1. A method of indirectly extruding a billet through a die on an apparatus including a stationary hollow die stem, a container accommodating the billet in a billet receiving hole axially formed therein concentrically with said die stem, an extrusion ram concentric with said billet receiving hole and adapted to close one end of the billet receiving hole, and a shear support separate from said container and positioned adjacent to one end of the container on the side of said one end of the billet receiving hole, said die including a pair of axially spaced large-diameter portions consisting of a front portion at one end of the die and a rear portion at the other end of the die, said front portion having a diameter slightly smaller than an inside diameter of said billet receiving hole and slightly greater than that of said rear portion, said method comprising the steps of:

positioning said die at one end of said die stem with said front portion held in abutting, non-fixed relation with said one end of the die stem;

closing said one end of the billet receiving hole by said extrusion ram;

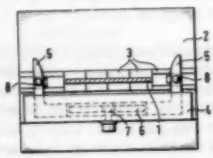
moving said container and said extrusion ram toward said die stem for pushing one end of the billet in said receiving hole and thereby extruding the billet at the other end thereof through said die to provide an extruded product in said die stem, while at the same time permitting an outer layer of the billet to be accumulated as a residual shell in an annular space which is defined by the inner surface of said billet receiving hole and the outer peripheral surface of said die, said outer layer of the billet flowing into said annular space through a clearance between said inside diameter of said receiving hole and the diameter of said rear portion of said die which is slightly smaller than said inside diameter;

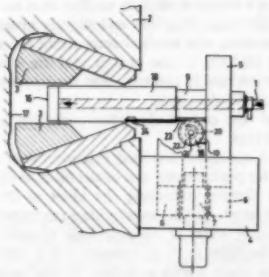
upon completion of the extrusion of said billet, moving said container synchronously with said shear support to position said die and a discard outside said one end of said billet receiving hole and to thereby hold said die in said shear support such that a shearing force applied to said die and discard is not imparted to said die stem and said container upon severing of said discard positioned outside said shear support, said discard including a residual unextruded material and a dummy block;

severing said discard from said residual shell and said extruded product by moving a shear along the end surfaces of said shear support and said die;

pulling said extruded product out of said die stem; and
removing said die with said residual shell out of said shear support.

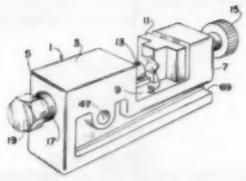
4,459,838
GRIPPING HEAD OF A SHEET STRETCHER WITH A CENTERING DEVICE
Heinrich Kutz, Neuss, and Gerd Jung, Koblenz, both of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany
Filed Mar. 18, 1982, Ser. No. 359,357
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111146
Int. Cl.³ B21D 11/02
U.S. Cl. 72—302 8 Claims





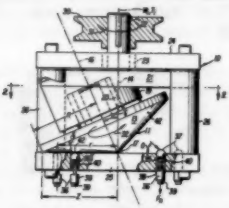
1. A gripping head of a sheet stretcher comprising:
a gripping head having a gripping opening therein;
at least one pair of openable and closable gripping jaws operably mounted in said opening to grippingly engage the end portion of a sheet to be stretched;
a sheet centering device mounted in cooperative relationship with said gripping head comprising,
two centering arms movable in substantially opposite directions with respect to each other and transversely with respect to the opening and closing direction of said jaws between centering and retracted positions,
means to operate said centering arms to automatically position the end position of the sheet substantially centrally with respect to said jaws; and
means operatively mounted on at least one of said centering arms for determining the depth of insertion of the end portion of the sheet in said gripping opening.

4,459,839
CRIMPING TOOL
Charles D. Cochran; Michael S. Clardy, and William B. Kroske, all of Greenville, S.C., assignors to FTZ Industries, Inc., Simpsonville, S.C.
Filed Oct. 13, 1981, Ser. No. 310,460
Int. Cl.³ B21D 7/06
U.S. Cl. 72—412 14 Claims



1. A crimping tool, comprising:
a body portion, said body portion having a proximal end and a distal end and defining between said proximal end and said distal end a working section, said body portion defining a threaded cavity near said proximal end;
an adjustable anvil movable within said working section from a position located closer to said distal end than said proximal end;
a crimp pin movable within said working section toward and away from said anvil from a position located closer to said proximal end than said distal end; and
a power screw with an enlarged head portion threadedly engaged within said threaded cavity, said enlarged head portion capable of bottoming against said proximal end when said crimp pin has reached the full extent of its movement toward said anvil and thus limits the movement of said crimped pin toward said anvil.

4,459,840
ROLLING WOBBLE PRESS
John H. Francis, Charles Town, W. Va., assignor to Frederick Manufacturing Company, Frederick, Md.
Filed Sep. 29, 1982, Ser. No. 426,874
Int. Cl.³ B21J 9/18
U.S. Cl. 72—452 4 Claims



1. A press for operating a plurality of spaced punches, the press comprising:
a first axis;
a first surface intersected by the first axis; wherein all lines in the first surface which are formed by an imaginary plane parallel with and intersecting the first axis form equal angles with the first axis;
a conical member having a conical surface in engagement with the first surface along a line of contact;
mounting means for rotatably mounting the conical member for rotation about a second axis, oblique with respect to

the first axis, and intersecting the first axis at a point of intersection coincident with the first surface;

means for rotating the mounting means about the first axis in a first direction, wherein the conical surface revolves in the opposite direction around the point of intersection as the conical surface rotates about the second axis, so that the conical surface rolls over the first surface to generate progressive line contact therewith without sliding with respect thereto to create a pressing force between the conical surface and first surface;

a plurality of spaced apart punch stations in the first surface;

a punch in each station; and

means for normally holding the punches projected from the planar surface toward the conical surface, wherein the conical surface engages each punch individually as the conical surface rolls on the first surface to there depress the punches individually.

4,459,841

MINIATURE PRESSURE TRANSDUCER

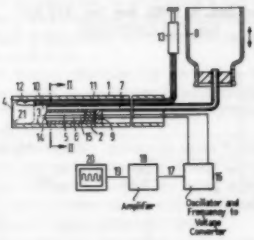
Bertil Hök, Västeras, and Olof Ekström, Brottby, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 17, 1982, Ser. No. 389,377

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130367

Int. Cl.³ G01L *9/02, 27/02*

U.S. Cl. 73—4 R **2 Claims**



1. A miniature pressure transducer for generating an electrical signal which corresponds to a liquid pressure to be measured in a liquid vessel, comprising an outer tube, a measuring cell disposed in the outer tube, said measuring cell having means for generating an electrical magnitude corresponding to the pressure to be measured, said outer tube having a chamber in fluid communication with the measuring cell, and a fluid line for the passage of liquid to the chamber, and means for connecting said chamber directly to the liquid in the liquid vessel comprising an opening in the outer tube, characterized in that an expansible container is disposed in the chamber, said container having a connecting line lying in the outer tube and connecting with the interior of said container, and expansion control means for coupling with said connecting line remote from said container for the purpose of filling and emptying said container; and in that said container in a filled condition of the container being expanded to close the opening of the outer tube and thereby to shut off fluid communication between the liquid in the chamber and the liquid in the liquid vessel without interrupting fluid communication between the fluid line and the measuring cell whereby the transducer can be calibrated by means of a predetermined liquid pressure supplied to said chamber via said fluid line.

4,459,842

ROLL WEAR TESTING METHOD AND APPARATUS THEREFOR

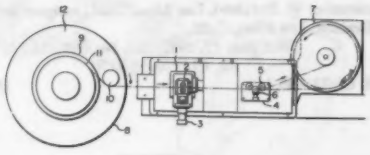
Junji Kihara, 5-5-3, Matsubara, Setagaya-ku, Tokyo; Keiji Watabe, 2-11-7, Midorigaoka, Atsugi; Kouichi Douya, 590-100, Ouzenji, Tama-ku, Kawasaki; Kazumoto Nakamura, 3-37-34, Sakuragaoka, Setagaya-ku, Tokyo, and Shouzo Takeuchi, 4-28-15, Nishishinkoiwa, Katsushika-ku, Tokyo, all of Japan

Filed Nov. 9, 1981, Ser. No. 319,721

Claims priority, application Japan, Nov. 12, 1980, 55/158142

Int. Cl.³ B21C *51/00*; B21B *37/12*

U.S. Cl. 73—7 **2 Claims**



1. A roll wear testing apparatus characterized in that the apparatus comprises a feeding means for the steel strip, a rolling means, a winding up means, and a means for measuring the forward tension of the steel strip, the feeding means being provided with a winding-back means accompanied with a guide roll in a furnace having the maximum heating speed of 80° C. per minute and being installed in a fuel rich atmosphere, the rolling means comprising a compression means having a maximum compression force of 6,000 kgf and a pair of vertical ring rolls, the distance (or interval) between the outlet of the furnace and the inlet of the rolling means being short to control the temperature of the steel strip, and both the diameter of the roll and the circumferential speed of the ring rolls being reduced to about a tenth of those of the actual rolling mill, the means for measuring the forward tension comprising a pair of guide rolls and a load cell to adjust the speed of the winding up means to be the same as the speed of the steel strip at the outlet of the rolling means.

4,459,843

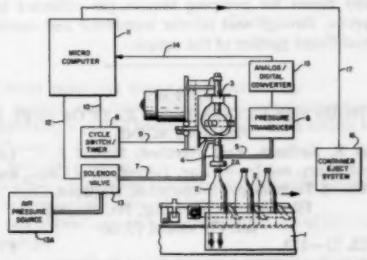
APPARATUS AND METHOD FOR TESTING CONTAINERS

La Moyne W. Durham, 1113 Sausalito Ct., Bartlett, Ill. 60103

Filed Jul. 6, 1982, Ser. No. 395,683

Int. Cl.³ G01M *3/26*

U.S. Cl. 73—37 **11 Claims**



1. Apparatus for testing containers comprising:

test fluid supply means for supplying test fluid to a container to be tested,

pressure monitoring means for monitoring the difference between a first pressure in a container being tested after the initiation of the supply of test fluid by the supply

means and a second pressure in the container at a time subsequent to monitoring of the first pressure,

control means responsive to the monitored difference in the first and second pressures for rejecting containers when said difference is greater than a predetermined acceptable pressure loss value,

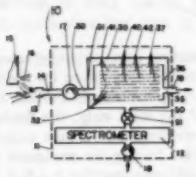
wherein said control means includes means for automatically adjusting the predetermined acceptable pressure loss value as a function of the monitored difference in the first and second pressures for containers previously tested.

4,459,844

GAS SEPARATION CHAMBER AND PORTABLE LEAK DETECTION SYSTEM

Christopher W. Burkhart, Los Altos, Calif., assignor to Smith & Denison, Los Altos, Calif.

Filed Jun. 17, 1982, Ser. No. 389,234
Int. Cl.³ G01M *3/20*
U.S. Cl. 73—40.7 **15 Claims**



1. An improved leak detector comprising:

a portable housing;

a mass spectrometer, including an evacuation pump, adapted for detecting a tracer gas used to identify leaks, said spectrometer being mounted in said housing;

a separation chamber mounted to said housing, coupled to said spectrometer, and evacuated by said evacuation pump;

a probe including a flexible hose extending from said separation chamber for collecting gas samples proximate possible leaks;

a tubular separation membrane mounted within said separation chamber, one end of the said tubular membrane being connected to receive the sample gas collected by said probe, the other end of said tubular membrane being vented to the atmosphere, said membrane being selectively permeable to permit tracer gas contained in the sample gas being pumped through the tubular membrane to diffuse through the membrane into said separation chamber and be detected by said spectrometer; and

pump means for pumping sample gas collected by said probe, through said tubular membrane and venting the undiffused portion of the sample.

4,459,845

METHODS FOR DETERMINING RATE OF FUEL FLOW TO AN ENGINE

Joseph R. Keilbach, East Hartford; Ronald P. C. Lehrach, Glastonbury, and Ira W. Kay, Tolland, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 25, 1982, Ser. No. 391,908
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—113 **6 Claims**

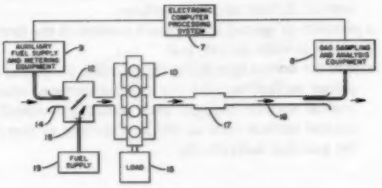
1. A method of determining rate of fuel flow to a combustion-driven engine running at selected fixed operating conditions which comprises the steps of:

measuring volumetric concentrations of selected gaseous species in the exhaust from the engine;

determining from the concentration measurements the ratio of air flow rate to fuel flow rate to the engine when the engine is running at the selected fixed operating conditions to obtain a first air-to-fuel-flow-ratio;

adding additional fuel at a predetermined constant flow rate to the air-fuel flow to the engine;

measuring the volumetric concentrations of the selected gaseous species again, after the additional fuel is added to the air-fuel flow to the engine;



determining from the second concentration measurements the ratio of air flow rate to fuel flow rate to the engine to obtain a second air-to-fuel flow ratio; and

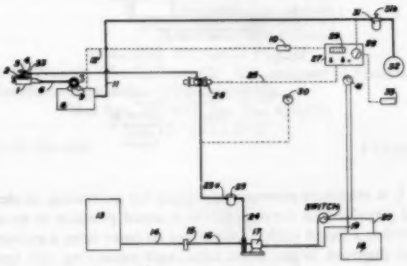
comparing the product of the second air-to-fuel-flow ratio and the known additional fuel flow rate to the difference between the first air-to-fuel-flow ratio and second air-to-fuel-flow ratio to obtain the rate of fuel flow to the engine when the engine is running at the selected fixed operating conditions.

4,459,846

FUEL CONSUMPTION TESTING ARRANGEMENT

Eugene Harrington, Pekin, Ind., assignor to Tune O Mize Inc., Louisville, Ky.

Filed Jun. 9, 1980, Ser. No. 157,219
Int. Cl.³ G01F *9/02*
U.S. Cl. 73—114 **8 Claims**



1. A fuel consumption testing device for analysis of internal combustion engines having fuel carburation means including fuel inlet, and includes a fuel source a direct current battery powered fuel pump means to receive fuel from the fuel source and deliver fuel at a uniform rate of flow, fuel pressure to supply the uniform rate of fuel at a selected pressure, flow transducer means to receive the flow of fuel from the fuel pressure regulator means wherein the flow transducer means includes signal output means indicative of the rate of flow of fuel through the transducer means and fuel outlet means adapted to be connected to the fuel input of the carburation means, velocity sensor means to sense the speed of rotation of the internal combustion engine under test; load means to selectively supply a known resisting load to the engine under test to restrict the operation of the engine under test and computation means to continuously inter-relate the speed of rotation of the internal combustion engine under test to the fuel flow rate to provide an output signal indicative of the relationship between

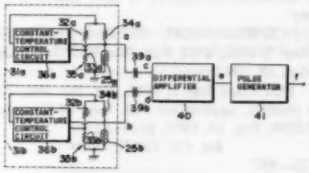
the speed of rotation of the internal combustion engine under test and the fuel flow rate.

4,459,847

VORTEX SHEDDING DEVICE

Toru Kita, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Nov. 18, 1981, Ser. No. 322,656
Claims priority, application Japan, Nov. 19, 1980, 55-161865
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—118.2 **6 Claims**



1. A vortex shedding device for use in measuring the rate at which air flows into the air intake of an internal combustion engine, said device comprising:

(a) a duct connected to said engine air intake;

(b) an element mounted within said duct for forming vortices in air flowing though said duct;

(c) first and second hot wires located in said duct and alternately exposed to vortices formed by said vortex forming element, said first and second hot wires having a resistance varying as a function of temperature; and

(d) circuit means including:

a first vortex detector for providing a voltage signal corresponding to variations in said resistance of said first hot wire and independent of variations in said resistance of said second wire;

a second vortex detector for providing a voltage signal corresponding to variations in said resistance of said second hot wire and independent of variations in said resistance of said first wire;

a differential amplifier having an input from said first vortex detector and another input from said second vortex detector, said differential amplifier being operable to amplify the difference between the voltage signals from said first and second vortex detectors; and

a pulse generator for providing a pulse signal having a frequency which corresponds to that of the output signal from said differential amplifier;

whereby, upon failure of only one of said first and second vortex detectors, said pulse signal is provided during steady state of operation of said engine.

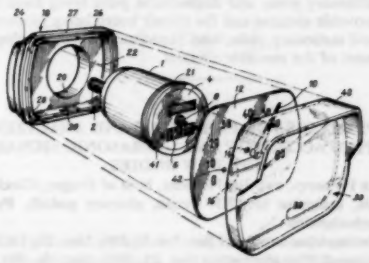
4,459,848

DEVICE FOR MAINTAINING A DIAL ON A HOUSING AND A DISTANCE RECORDER OR THE LIKE PROVIDED WITH SAID DEVICE

Roger Huret, deceased, late of Nanterre, France, and by Alain P. B. Huret, legal representative, Bougival, France, assignors to Huret et ses Fils, Nanterre, France

Filed Feb. 11, 1982, Ser. No. 347,990
Claims priority, application France, Feb. 23, 1981, 81 03507
Int. Cl.³ G01D *11/24*
U.S. Cl. 73—431 **11 Claims**

1. A kilometer or like recorder comprising in combination and assembled along a longitudinal axis of the recorder, a housing having an outer peripheral flange adjacent on end of the housing, a dial located adjacent said end of said housing, a device for maintaining the dial assembled with the housing and comprising an annular adaptor which has a substantially L-shaped axial section, a bottom which defines an opening by means of which opening the adaptor is co-axially mounted on said housing by sliding along said housing in a direction toward said end so that said bottom is in abutting relation to said flange on a side of said flange remote from said dial, said adaptor being free to slide along said housing in a direction away from said end without damage to a component part of the recorder for disassembly from said housing for interchanging the adaptor for a different adaptor, said adaptor having a peripheral collar which axially projects from said bottom, surrounds said flange and includes means for assembly, a transparent window



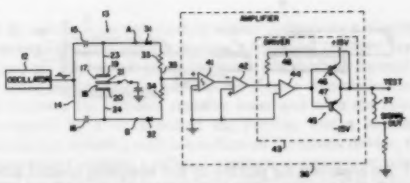
having the same shape and size as the collar of the adaptor when viewed in a direction parallel to said axis and comprising means for assembly detachably cooperative with said means for assembly of said adaptor, and an inner support shoulder for the dial on a periphery of one of two elements consisting of said window and said adaptor, whereby the dial is trapped and held between said elements when the said elements are assembled solely by their means for assembly and is maintained against the housing when said elements are assembled with said flange interposed therebetween.

4,459,849

COMPACT FORCE MEASURING SYSTEM

John Calamera, Staten Island, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Jan. 31, 1983, Ser. No. 462,173
Int. Cl.³ G01P *15/13*
U.S. Cl. 73—517 B **9 Claims**



1. A force measuring sensor characterized by:

(a) a support structure formed as a unitary member and supporting a pair of bearing housings and a circuit board including a circuit;

(b) a movable element;

(c) means for generating reactive force between the support structure and the movable element;

(d) a pair of bearings, each retained within one of the bearing housings;

(e) pivot means fixed to the movable element and cooperating with said pair of bearings to form a bearing assembly which pivotably supports the movable element on the support structure;

(f) said circuit being a hybrid integrated circuit and including circuitry which translates a sensed displacement of the movable element to a first output;

(g) means to accept a power amplifier on the hybrid circuit

for providing a second output which has increased current level over the first output at high levels of sensed displacement of the movable element, with said second output having a current level approximating that of the first output at moderate amounts of sensed displacement, wherein the power amplifier may be selectively mounted in accordance with the intended application of the force measuring sensor and when either output is provided to the reactive force means, that output provides an indication of measuring force;

(h) a capacitor having at least one displaceable plate and one stationary plate, said displaceable plate being fixed to the movable element and the circuit board being mounted on said stationary plate, said capacitor sensing the displacement of the movable element.

4,459,850

APPARATUS FOR PICKING-UP AND ANALYZING EMITTED ACCOUSTIC AND ULTRASONIC SIGNALS IN HOLLOW BODIES

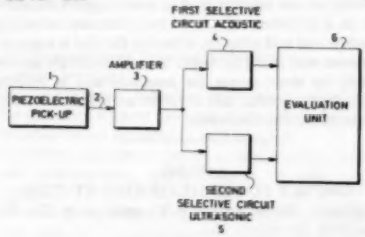
Blanka Hyanova, and Jiri Novotny, both of Prague, Czechoslovakia, assignors to CKD Praha, oborovy podnik, Prague, Czechoslovakia

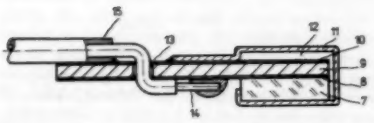
Continuation-in-part of Ser. No. 98,890, Nov. 29, 1979, abandoned. This application Sep. 22, 1981, Ser. No. 304,587

Claims priority, application Czechoslovakia, Nov. 29, 1978, 7861-78

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—587 **1 Claim**





1. An apparatus for picking up and analyzing emitted acoustic and ultrasonic signals in hollow bodies, comprising a piezoelectric pick-up device, a charge amplifier, at least one first selective circuit of the low-frequency pass filter type, at least one second selective circuit of the ultrasonic frequency band pass filter type, and an evaluating device, the piezoelectric pick-up device being connected to the input side of the charge amplifier the output side of which is parallel- connected to at least one first selective circuit and to at least one second selective circuit, the outputs of said selective circuits being connected to the input of the evaluating device, the piezoelectric pick-up device comprising a laminated plate coated at both sides with copper layers, the side of said plate facing the measured body being provided with a piezoelectric plate the other side of which is cemented to a copper foil forming a protective casing of the apparatus, said casing being shaped so that between itself and the respective layer of the laminated plate, a spacing is provided which is designed for a strap for attaching the apparatus to the measured body, the laminated plate being provided with an aperture for the core of a shielded coaxial cable soldered on the copper layer of the laminated plate while the cable shield is soldered on the opposite copper layer of the laminated plate, to which the protective copper foil of said casing is also soldered.

4,459,851

METHOD AND DEVICE FOR THE LOCALIZATION AND ANALYSIS OF SOUND EMISSIONS

Horst A. Crostack, Beringweg 2, 5860 Iserlohn, Fed. Rep. of Germany

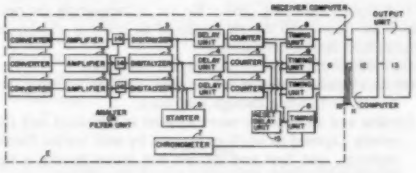
PCT No. PCT/DE81/00137, 371 Date May 7, 1982, 102(e) Date May 7, 1982, PCT Pub. No. WO82/00893, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 5, 1981, Ser. No. 380,731

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1980, 3033990; Sep. 10, 1980, 8024132[U]

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—587 **7 Claims**



1. Method for localizing and analyzing sound emissions in the testing of an article of apparatus or structural components for points of damage, wherein the location of the sound emission source is determined from the imcoming sound pulse at a plurality of individual measuring receivers in spaced arrangement on the surface of the article being tested, characterized therein by dividing each measuring receiver into at least three separate sound converter elements (1) having a total width smaller than the expected sound field diameter, measuring the arrival time of a pulse or of a pulse characteristic in each of said elements (1), determining the propagation time difference for said elements (1) of each measuring receiver (E), determining the sound arrival direction from these propagation time differences for each measuring receiver (E), and, subsequently, determining the position of the sound emission source from the direction values and the position coordinates of said measuring receivers (E).

4,459,852

ACOUSTIC MICROSCOPE USING LINE-FOCUS ACOUSTIC BEAM

Noriyoshi Chubachi, No. 4-6-203, 1-Chome, and Junichi Kushibiki, No. 48, Aza-Nukazaike, Arai, Sendai City, both of Japan

Filed Jul. 6, 1982, Ser. No. 395,711

Claims priority, application Japan, Jul. 8, 1981, 56-107402

Int. Cl.³ G01N *29/00*

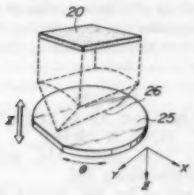
U.S. Cl. 73—606 **14 Claims**

1. An acoustic microscope for detecting acoustic properties of a specimen comprising:

an acoustic transducer head for propagating an acoustic beam toward a specimen and which is linearly focussed in a direction perpendicular to the direction of propagation of the acoustic beam;

means for moving the acoustic transducer head relative to a

specimen in the direction of propagation of the acoustic beam; and



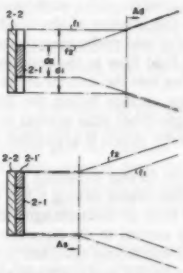
means for rotating the acoustic transducer head relative to a specimen about an axis which is parallel with the direction of propagation of the acoustic beam.

4,459,853

ULTRASONIC MEASURING SYSTEM

Hirohide Miwa, Kawasaki; Hajime Hayashi, Yamato, and Takaki Shimura, Machida, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 31, 1982, Ser. No. 363,852
Claims priority, application Japan, Mar. 31, 1981, 56-48275
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—626 **17 Claims**



1. An ultrasonic measuring system which is provided with a probe and which is operable simultaneously with plural frequencies for measuring the interior of a subject of measurement by respective ultrasonic waves, each said ultrasonic wave having a corresponding effective acoustic field for said measuring, wherein the probe comprises

a plurality of ultrasonic transducer elements which are capable of simultaneous operation with at least two of said ultrasonic waves of said plural frequencies;

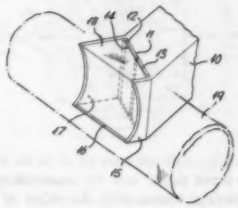
shape-changing means for changing the shape of the effective acoustic field corresponding to at least one of the ultrasonic waves to substantially coincide to the shape of at least one other of said effective acoustic fields at a desired portion of the interior of the subject at which said measuring is to occur, wherein said desired portion and the respective distance thereof from the probe at which the two respective acoustic fields substantially coincide is selectively changed.

4,459,854

ULTRASONIC TRANSDUCER COUPLING MEMBER

Paul C. A. Richardson, Guildford, and Andrew L. Stevens, London, both of England, assignors to National Research Development Corporation, London, England

Filed Jul. 19, 1982, Ser. No. 399,954
Claims priority, application United Kingdom, Jul. 24, 1981, 8122989
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—644 **10 Claims**



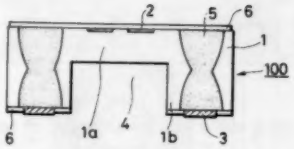
1. An ultrasonic transducer comprising a coupling member made of a hydrogel which is mechanically stable in a wet surgical field.

4,459,855

SEMICONDUCTOR PRESSURE SENSOR

Kozo Yamagami, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1982, Ser. No. 407,362
Claims priority, application Japan, Aug. 12, 1981, 56-127491
Int. Cl.³ G01L *9/06*
U.S. Cl. 73—727 **4 Claims**



1. In a semiconductor pressure sensor comprising a substrate of monocrystalline silicon having a diffused resistive layer formed on one surface of the substrate and a cavity formed in the other surface of the substrate to form a thin-walled area that includes the diffused resistive layer and with the cavity surrounded by a thick-walled leg portion, and a hermetic sealable cap covering said one surface of the sensor device, the improvement wherein a diffused conductive region is provided in said leg portion and is connected electrically to said diffused resistive layer, said diffused conductive region extending from said one surface of the silicon substrate to an opposite surface at an end of said thick-walled leg.

4,459,856

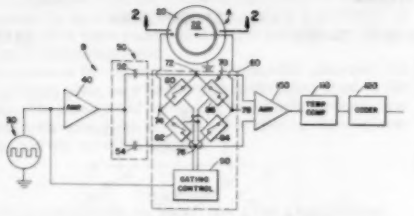
CMOS BRIDGE FOR CAPACITIVE PRESSURE TRANSDUCERS

Wen-Hsiung Ko; Cliff D. J. Fung, both of Cleveland Heights, Ohio, and Wei-Jiun Shen, Sunnyvale, Calif., assignors to Case Western Reserve University, Cleveland, Ohio

Filed Nov. 10, 1982, Ser. No. 440,575
Int. Cl.³ G01L *19/04*
U.S. Cl. 73—754 **25 Claims**

1. An impedance discrimination circuit for measuring a sensed condition related impedance variation, the circuit comprising:

at least first and second temporary charge input signal;
first and second impedance means at least one of which varies with the sensed condition; and,
gated switched circuit for cyclically connecting the first temporary charge storage means with the first and second impedance means alternately in synchronization with the



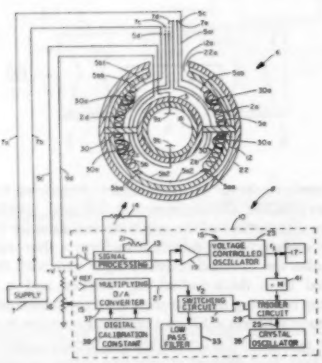
a.c. driving input signal and for connecting the second temporary storage means with the other of the first and second impedance means alternately in synchronization with the AC driving input signal, whereby the switched connection between the first and second temporary charge storage means and the first and second impedance means is cyclically reversed.

4,459,857

ELECTROMAGNETIC FLOWMETER

Jean P. Murray, Minneapolis; David C. Bohn, Stillwater Township, Washington County, and Darroll D. Bengtson, New Brighton, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Jun. 16, 1982, Ser. No. 388,953
Int. Cl.³ G01F *1/58*
U.S. Cl. 73—861.12 **16 Claims**



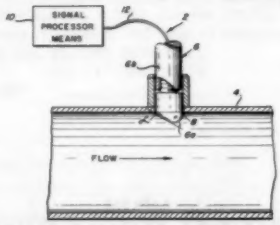
12. An improved electromagnetic flowmeter energized in a known manner for measuring the flow of a fluid therethrough of the type having
a flow tube adapted to be connected in a flow system for allowing the flow of the fluid therethrough,
first coil means comprising a plurality of turns nonadjustably supported by the flow tube, said first coil means having terminals for coupling to a power supply for providing magnetomotive force which produces a magnetic field, a portion of which field interacts with the fluid flowing through the flow tube for producing signals representative of the flow,
electrode means supported by the flow tube and coupled to the fluid for receiving the signals,
signal processing means electrically coupled to the electrode means for processing the signals and for producing an output signal respresentative of flow, and
adjusting means coupled to the first coil means for permitting selection of the effective number of turns comprising the first coil means for thereby selecting the magnitude of the magnetomotive force supplied by the first coil means.

4,459,858

FLOW METER HAVING AN ELECTROMAGNETIC SENSOR PROBE

Lawrence B. Marsh, Silver Spring, Md., assignor to Marsh-McBirney, Inc., Gaithersburg, Md.

Continuation-in-part of Ser. No. 303,555, Sep. 18, 1981, abandoned. This application Jun. 1, 1983, Ser. No. 500,086
Int. Cl.³ G01F *1/58*
U.S. Cl. 73—861.12 **17 Claims**



1. A flow meter for measuring the velocity of fluid flow in a conduit, comprising
(a) a generally cylindrical electromagnetic sensor probe means for generating electrical signals as a function of the velocity of fluid flow within the conduit, said probe means including a probe head and a body portion; and
(b) means for mounting said probe means within an opening contained in the conduit with a portion of said probe head protruding into the interior of the conduit and with the longitudinal axis of said probe means extending normal to the direction of fluid flow in the conduit, the probe head portion protruding into the interior of the conduit defining a debris shedding surface facing the fluid flow and arranged at an angle other than normal to the direction of fluid flow, whereby debris is prevented from accumulating thereon;
(c) said probe means further including
(1) electromagnetic means having a pair of poles for generating in the fluid an electromagnetic field the axis of which extends normal to the direction of flow; and
(2) a plurality of electrodes mounted in said probe head portion for producing said electrical signals in response to the flow of fluid through said electromagnetic field, said electrodes being arranged beyond the poles of said electromagnetic means and comprising at least a pair of sensing electrodes symmetrically arranged relative to said field axis along a line transverse to the direction of fluid flow within the conduit.

4,459,859

FLOWMETER

Kenneth E. Price, 1534 Channelwood Dr., Whittier, Calif. 90601, and Michael L. Schuman, 3216 Granada Ave., El Monte, Calif. 91732

Filed Jul. 12, 1982, Ser. No. 397,599
Int. Cl.³ G01F *1/22*
U.S. Cl. 73—861.54 **3 Claims**

1. A flowmeter for monitoring the flow rate of a liquid passing through a generally horizontal fluid line comprising:
a housing comprising a body and a cap wherein:
the body defines:

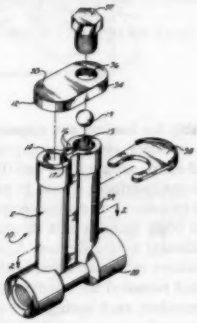
a translucent, generally vertically extending, substantially cylindrical inlet ball chamber having a plurality of ribs extending radially inwardly a short distance from the inner surface of the wall of the inlet ball chamber along the vertical extent of the inlet ball chamber, the ribs having inner edges essentially parallel to the axis of the inlet ball chamber and defining a ball race;

an inlet coupling capable of being connected to a first section of a generally horizontal fluid flow line;

a generally circular inlet opening having a diameter less than the diameter of the inlet chamber communicating between the inlet chamber and the inlet coupling;

a generally vertically extending outlet chamber, laterally adjacent to the inlet chamber;

an outlet coupling capable of being connected to a second section of the fluid flow line, co-linear with the first section;



an outlet opening communicating between the outlet chamber and the outlet coupling; and

a communicating flow passage between the inlet chamber and the outlet chamber extending along the vertical extents of the inlet chamber and the outlet chamber and having a flow width less than the diameter of the inlet chamber;

the cap comprises a generally flat top plate mountable to the body for enclosing the top ends of the inlet ball chamber, the outlet chamber and the passage;

a ball having a diameter greater than the flow width of the passage and a selected net density disposed in the inlet chamber and afforded slidable vertical movement along the ball race; and

a clip member mountable on the housing for marking a select vertical level of the inlet ball chamber.

4,459,860

FLOW SENSOR WITH EXTENDED LOW FLOW RANGE

Ronald B. Walters, Wembley, England, assignor to Sperry Limited, Cobham, England

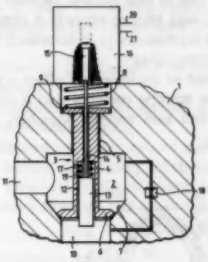
Filed Dec. 7, 1982, Ser. No. 447,509

Claims priority, application United Kingdom, Dec. 9, 1981, 8137041

Int. Cl.³ G01F 1/22

U.S. Cl. 73—861.55 **3 Claims**

1. A flow sensing device comprising a flow sensor body, a fluid duct formed in said body, a throat in the duct, and a spring-loaded bobbin mounted in the duct so as to be axially movable and having a crest which closes the throat in the duct in the position of zero fluid flow, a spring-loaded piston mounted so as to be axially movable at low flow rates and disposed so that its opposite sides are acted on by fluid pressures upstream of, and downstream of, the throat, said bobbin and piston movable together at high flow rates, displacement sensing means responsive to the combined displacements of the piston and bobbin, and a calibrated orifice connected in parallel



with the throat so as to by-pass the flow of fluid between the bobbin and the throat.

4,459,861

MEASURING TURBINE FOR HIGH VOLUME, HIGH VISCOSITY FLUIDS

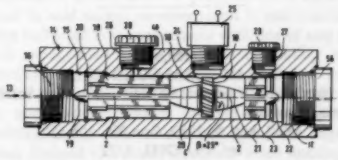
Helmuth Hoffmann, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Hydrotechnik GmbH, Limburg, Fed. Rep. of Germany

Filed Apr. 1, 1982, Ser. No. 364,531

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3112960

Int. Cl.³ G01F 1/12

U.S. Cl. 73—861.78 **10 Claims**



1. A turbine for measuring the flow within a flow channel comprising:

a flow channel housing;

a turbine rotor arranged in the flow channel with its axis in the direction of flow;

an inductive pulse detector mounted in said flow channel housing adjacent said turbine rotor;

an outlet flow rectifier mounted in said housing immediately downstream of said turbine rotor; and

a flow adjusting element immediately downstream of said outlet flow rectifier comprising a discharge connector having an inner orifice plate followed by a varying internal circumference gradually narrowing in the direction of flow.

4,459,862

CLAMP AND METHOD ENABLING TIGHTNESS CHECK

Francis L. Fillmore, Birmingham; David Wampler, Jr., Warren, and Theodore H. Collins, Troy, all of Mich., assignors to GKN Automotive Components, Inc., Southfield, Mich.

Filed Aug. 18, 1982, Ser. No. 409,242

Int. Cl.³ G01L 5/00

U.S. Cl. 73—862.01 **8 Claims**

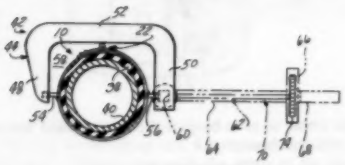
5. A method of checking the tightness of an installed clamp connection, said clamp connection comprising a circular member, an annular member encircling said circular member and adapted to effect a sealing relationship therewith, and a band clamp encircling said annular member, said method comprising the steps of:

applying an increasing circumferential torque to said band clamp; and

determining whether said band clamp slips circumferentially relative to one of said annular member and circular member before said torque exceeds a predetermined torque selected to represent a predetermined tightness.

7. A clamp comprising:

a band adapted to encircle and effect a sealing connection between an annular member and a circular member received within said annular member, said band further comprising:



first protrusion means circumferentially deformable about said sealing connection for tightening said band at assembly about said annular member and said circular member to a tightness in excess of a predetermined tightness; and

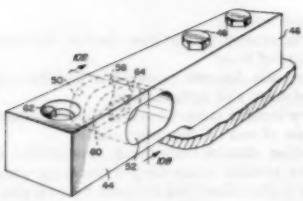
second protrusion means spaced circumferentially from said first protrusion means and adaptable after said deformation of said first protrusion means to allow the application of a predetermined circumferential torque to said sealing connection in excess of a predetermined torque selected to correspond to said predetermined tightness.

4,459,863

SHEAR BEAM LOAD CELL

Kjell H. Nordström, Västeras, Sweden, assignor to Safelink AB, Västeras, Sweden

Filed Aug. 9, 1982, Ser. No. 406,550
Int. Cl.³ G01L 1/22
U.S. Cl. 73—862.66 **22 Claims**



1. A shear beam load cell comprising:

(a) a beam member having—

(i) a first deflectable weigh portion for receiving a load force to be measured,

(ii) a second relatively rigid support portion for supporting said beam member, and

(iii) recesses formed in opposing sides of the first weigh portion for defining an unsymmetrical I-shaped transverse cross-section, wherein the recesses have dimensions such that the bottom wall surface of one of the recesses is insensitive to torsion; and

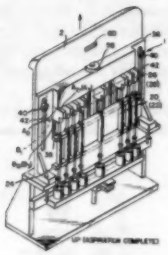
(b) strain gage sensing means positioned in said one recess on the bottom wall surface insensitive to torsion for measuring the shear strain corresponding to the load force applied to the first weigh portion.

4,459,864

FLUID LOADING AND DISPENSING DEVICE

Thomas J. Cirincione, Flushing, N.Y., assignor to Electro-Nucleonics, Inc., Fairfield, N.J.

Continuation-in-part of Ser. No. 312,677, Oct. 19, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,759
Int. Cl.³ B67D 5/52
U.S. Cl. 73—863.32 **9 Claims**



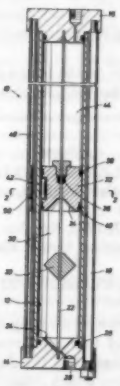
1. An assembly for loading and dispensing varying amounts of fluid from multiple syringes comprising a body member having spaced-apart surfaces A_0 and B_0, a handle member having spaced-apart surfaces A_1 and B_1 parallel to said surfaces A_0 and B_0 and mounted for relative reciprocal movement with respect to said body member in a direction D_0 the same as a vector perpendicular to said surfaces A_0 and B_0, and a plurality of syringe actuators each associated with an individual one of said syringes and mounted for relative movement with respect to said body member, each syringe actuator having actuating surfaces for respective contact with said surfaces A_0, B_0, A_1 and B_1.

4,459,865

CONSTANT PRESSURE CYLINDER WITH VORTEX MIXER

Brian H. Welker, Sugar Land, Tex., assignor to Welker Engineering Company, Sugar Land, Tex.

Filed Jan. 24, 1983, Ser. No. 460,481
Int. Cl.³ G01N 1/10, 1/14
U.S. Cl. 73—864.62 **9 Claims**



1. A sample storage apparatus comprising:

(a) an elongate hollow cylinder having cylinder heads at both ends to close said cylinder;

(b) a piston slidably mounted within said cylinder to divide said cylinder into first and second chambers, one chamber

serving to receive a pressurized fluid and the other chamber adapted to receive sample through a passage in one of said cylinder heads and thereby comprising a sample chamber;

(c) an elongate rod through said sample chamber concentric to said cylinder; and

(d) a slidably mounted vortex mixing means positioned on said rod for movement along said rod, said vortex means having a size and shape permitting said means to move along said rod without touching the wall of the surrounding cylinder while mixing sample in said sample chamber.

4,459,866

NON-UNIFORM DRIVE WITH BALANCING OF MASSES

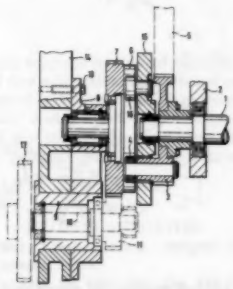
Richard Feldkämper, Lengerich, Fed. Rep. of Germany, assignor to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,740

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036930

Int. Cl.³ F16H *21/14*; F16N *35/02*

U.S. Cl. 74—69 **3 Claims**



1. Non-uniform drive, preferably for driving knife rollers, said drive comprising:

means to provide motive power to said drive;

an output shaft rotatable about an axis for providing a variable speed output from said drive;

a flywheel disc freely rotatably carried on said output shaft for balancing rotating masses;

input means cooperating with said means to provide motive power, said input means carrying a slot-shaped slideway disposed transversely to the axis of said output shaft;

a first crank pin carried by said output shaft and received in said slideway, for drivingly interconnecting said output shaft and said slideway said first crank pin spaced radially from the axis of rotation of said output shaft;

a second crank pin carried by said flywheel disc and which lies diametrically opposite the first crank pin at substantially the same spacing from the axis of rotation of said output shaft and which drives the freely rotatably flywheel disc, each of said crank pins lying on the same side of said slideway; and

said flywheel disc having an arcuate elongated hole and the first crank pin passing through said arcuate elongate hole of the flywheel disc.

4,459,867

RESETTABLE FORCE LIMITING DEVICE

Teddy L. Jones, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 28, 1981, Ser. No. 335,129

Int. Cl.³ F16H *27/02, 29/20*

U.S. Cl. 74—89.15 **15 Claims**

1. A resettable force limiting assembly including in combination:

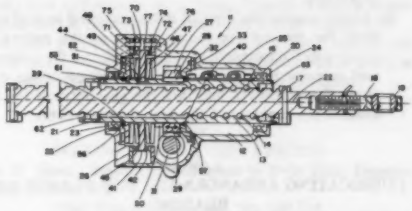
a force transmitting reciprocating output member drivingly carried by an actuating member mounted for rotation in a housing,

a reversible torque input mechanically coupled to said actuating member to cause said output member to move in a direction dependent upon the direction of rotation of said input,

a reciprocating reaction plate secured for rotation with said actuating member,

reaction plate engagement means having elements secured against rotation to said housing,

said elements disposed on either side of said reaction plate, said elements having means coupled thereto to resiliently separate said elements while allowing said elements to individually move towards and away from said reaction plate,



said reaction plate having means resiliently positioning said reaction plate between a pair of force transmitting means secured to said actuating member whereby tension and compression forces above a predetermined value experienced by said output member result in said reaction plate being deflected into engagement with one of said reaction plate engagement means elements depending upon the direction of said tension and compression forces to thereby cause any additional input torque to be reacted into said housing, reverse rotation of said input torque resulting in the release of a reaction plate engagement means element to thereby reset said force limiting assembly.

4,459,868

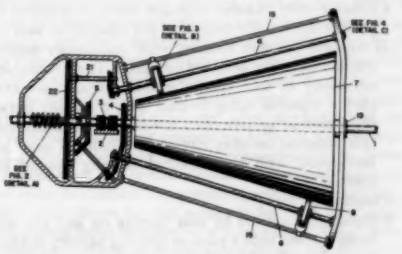
MECHANICAL POWER CONVERSION AND TRANSMISSION SYSTEMS

Frank R. Sargent, 41 B St., Laurel, Md. 20707

Continuation-in-part of Ser. No. 097,979, Nov. 28, 1979. This application Jul. 14, 1981, Ser. No. 283,215

Int. Cl.³ F16H *15/16, 13/00*

U.S. Cl. 74—191 **3 Claims**



1. A continously variable transmission comprising:

(a) an input shaft having forward and reverse gears selectively coupled thereto by a clutch,

(b) an output shaft coaxial with the input shaft,

(c) an idler cone rotatably mounted on the input shaft,

(d) a plurality of pairs of jackshafts equally spaced about the input shaft; each pair comprising a drive jackshaft and a driven jackshaft diametrically opposed relative to said input shaft;

(i) each drive jackshaft having a first gear means for cooperating with said forward and reverse gears such that when the forward gear is coupled to the input shaft the drive jackshaft rotates in a first direction and when said reverse gear is coupled to the ,8 input shaft the drive jackshaft rotates in a second direction,

(ii) each driven jackshaft connected to the output shaft by a second gear means,

(iii) each jackshaft having a wheel nonrotatably and slidably mounted thereon in constant frictional contact with the idler cone, and

(vi) actuator means for controlling in tandom the position of the wheels of each jackshaft pair along their associated jackshafts;

(e) torque responsive control means coupled to said output shaft for sensing the power needs of the output shaft relative to the torque of the input shaft and for controlling said actuator means, whereby the position of the wheels along the jackshafts, and thus the gear ratio of the transmission is a function of the sensed torque ratio.

4,459,869

LUBRICATING ARRANGEMENT FOR PLANET-GEAR BEARING

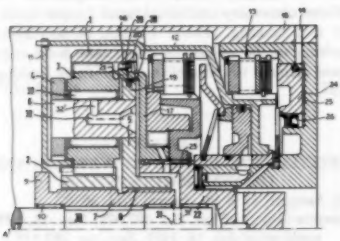
Manfred Bucksch, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, A.G., Friedrichshafen, Fed. Rep. of Germany

Filed Apr. 1, 1981, Ser. No. 250,026

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012846

Int. Cl.³ F16H *57/04;* **F01M** *9/00*

U.S. Cl. 74—467 **6 Claims**



1. A planetary-gear assembly comprising:

a planet-carrier member rotatable about an axis and having at least one axially extending pin offset from said axis;

an adjacent member forming with said carrier member an annular chamber centered on said axis and rotatable independently of said carrier member about said axis, the carrier member being formed with a radially outwardly open annular groove open toward said adjacent member, said adjacent member having a cylindrical inner surface juxtaposed with and directed radially inward at said groove;

a bearing on said pin;

a planet gear carried by said bearing on said pin, said pin being formed with a passage opening radially at said bearing and axially at said carrier member into said chamber;

means for feeding a liquid lubricant to said chamber radially inward of said passage; and

means including a seal ring fitted in said groove and engaging said cylindrical inner surface of said adjacent member for closing said chamber radially outward of said passage, whereby said liquid lubricant fills said chamber on rotation of said members and flows via said passage to said bearing.

4,459,870

REMOTE CONTROL MECHANISMS

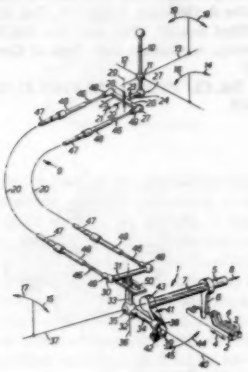
John G. Gill, Chignal St. James, Nr. Chelmsford, and James F. Hemens, Billericay, both of England, assignors to Teleflex Morse Ltd., Basildon, England

Continuation of Ser. No. 909,607, May 25, 1978, abandoned. This application Oct. 30, 1980, Ser. No. 202,203

Claims priority, application United Kingdom, Jun. 17, 1977, 25512/77

Int. Cl.³ G05G *9/00;* **F16C** *1/10*

U.S. Cl. 74—471 XY **25 Claims**



1. A remote control mechanism comprising push-pull control links operatively connected at one end to spaced locations of a beam, means mounting said beam for equal movement of said spaced locations thereof in the same direction, means mounting said beam for pivotal movement about an axis transverse to the length thereof by which said spaced locations of said beam move in opposite directions, and a member operatively associated with said beam and pivotally movable about two further mutually displaced axes, means connected to the member for effecting paired coincident movement of said links and equal movement of both said spaced locations of said beam in said same direction upon attendant pivotal movement of said member about one of said mutually displaced axes, and for effecting opposite movement of said links and pivotal movement of said beam about said transverse axis upon attendant pivotal movement of said member about the other of said mutually displaced axes.

4,459,871

BRAKE OPERATING DEVICE FOR A BICYCLE INCLUDING A SUPPORTED COVER

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Aug. 25, 1981, Ser. No. 296,172

Claims priority, application Japan, Sep. 10, 1980, 55-129534[U]

Int. Cl.³ G05G *11/00;* **B62K** *23/06;* **B62L** *3/02*

U.S. Cl. 74—480 R **9 Claims**

1. An operating device for a bicycle, which is mounted on a drop handlebar thereof having a straight portion and bent portions, said device comprising;

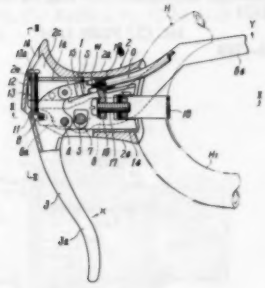
a bracket member having a front wall, a rear wall, and first and second side walls and mounted on said bent portion;

a first lever pivoted at the inside of said bracket member and extending along said bent portion;

a second lever pivoted at the outer surface of said first side

wall at said bracket member, extending along said straight portion, and having a connecting means for connecting said second lever with said first lever;

a grip-like shaped cover covering said bracket member and the pivoted bases of said first and second levers pivoted to said bracket member; and



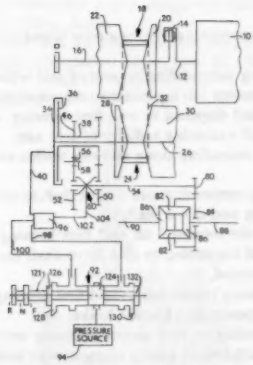
first and second supports interposed between the outer surface of said first side wall at said bracket member and the inner surface of said cover opposite to the outer surface of said first side wall, each having a height larger than a thickness of said second lever, and being disposed at both sides in the swinging direction of said second lever.

4,459,872

CLUTCH ACTUATOR

Thomas T. Tibbles, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 335,134
Int. Cl.³ F16H 37/08, 37/00
U.S. Cl. 74—701 **3 Claims**



1. A continuously variable transmission comprising:

an input shaft driven from a power source carrying a first variable pulley;

a second shaft carrying a second variable pulley and a drive belt adapted to transmit power between the input shaft and the second shaft by driveably engaging the first and second pulleys;

gear means for transmitting power from the second shaft;

clutch means for driveably coupling the gear means to the second shaft;

an output shaft;

a synchronizer clutch for selectively coupling the gear means to said output shaft;

means for actuating the clutch means whereby the synchronizer clutch couples the gear means to said output shaft before the clutch means couples the gear means to the second shaft;

the actuator means comprising an actuator body defining a cylinder within which a piston moves between first and second operating positions, the body defining first and second ports spaced from one another;

a manual valve for selectively pressurizing the first and second sides of the piston whereby the piston moves within the cylinder in response to a pressure force developed on the pressurized side of the piston;

valve means including first lands in said body and registering second lands on the piston for opening communication between the first side of the piston and a first port when said first piston side is pressurized and for opening communication between said second side of the piston and a second port when said second piston side is pressurized, said first and second ports being formed in said actuator body and communicating with said clutch means; and

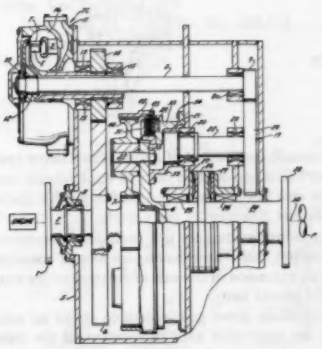
an exhaust port on said piston adapted to register with one of said ports when the piston is in an intermediate position between said first and second operating positions.

4,459,873

MARINE PROPULSION SYSTEM

James B. Black, Roscoe, Ill., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Feb. 22, 1982, Ser. No. 350,734
Int. Cl.³ F16H 47/00, 47/08
U.S. Cl. 74—720 **8 Claims**



1. A marine propulsion transmission for a fixed pitch propeller, comprising, a transmission housing, a power input shaft, a reversibly driven propeller shaft and a layshaft journalled in said housing, a torque converter of the single stage and fixed housing type and having an operative and an inoperative condition and mounted on said layshaft for driving the latter, gear means connected between said power input shaft and said converter for driving said converter when the latter is in the operative condition, a gear connection between said layshaft and said propeller shaft whereby said converter directly drives said propeller shaft in a reverse direction when said converter is in said operative condition, a planetary gear system including planetary gears driven by said power input shaft, said planetary gear system being inoperative to transmit any power when said torque converter is in operative condition, said planetary gear system connected with said propeller shaft for driving the latter in a forward direction, a disengageable friction type brake connected between said housing and said planetary gear system, said brake being disengaged when said torque converter is in said operative condition and driving said propeller shaft in said reverse direction, said brake being engaged to thereby anchor a portion of said planetary gear system to said

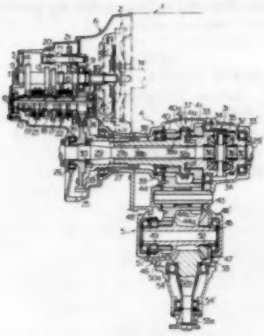
housing and to permit said planetary gear system to drive said propeller shaft in a forward direction.

4,459,874

TRANSAXLE MECHANISM OF FOUR-WHEEL VEHICLE DRIVE SYSTEM

Kunihiko Suzuki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 27, 1982, Ser. No. 372,447
Claims priority, application Japan, Jul. 15, 1981, 56-110436
Int. Cl.³ F16H *3/02*
U.S. Cl. 74—745 **8 Claims**



1. A transaxle mechanism of a four-wheel drive system for a vehicle with first and second pairs of road wheels, comprising

a power unit having an output shaft rotatable about an axis in a lateral direction of the vehicle;

a power transmission gear unit including transmission input and output shafts each having an axis of rotation parallel with an extension of the axis of rotation of the output shaft of said power unit;

an intermediate drive gear rotatable about an axis parallel with the respective axes of rotation of the transmission input and output shafts, the transmission output shaft being held in driving engagement with said drive gear;

a first wheel drive gear unit comprising power splitting gear means operative to split driving power from said drive gear into two power components and a differential gear assembly operative to transmit one of the two power components to the first pair of road wheels;

a second wheel drive gear unit comprising transfer gear means engageable with said power splitting gear means and operative to transmit therethrough the other of said two driving power components in a fore-and-aft direction of the vehicle;

said power splitting gear means operatively intervening between said drive gear and said second wheel drive gear unit and constituting low-and-high speed shifting gear means to transfer driving power from the drive gear to the differential gear assembly selectively with two different gear ratios; and

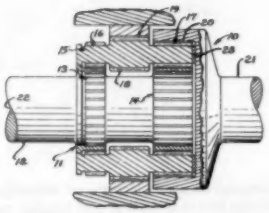
a driveline intervening between said transfer gear means and said second pair of road wheels and adapted to be driven by the driving power component transmitted through the transfer gear means.

4,459,875

TRAVELLING DRIVE FOR ROAD ROLLERS, MORE PARTICULARLY WITH VIBRATORY SYSTEM

Egon Mann, and Helmut Eymüller, both of Friedrichshafen, Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,802
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021323
Int. Cl.³ F16H *3/44*
U.S. Cl. 74—785 **4 Claims**



1. An axially compact drive for a road wheel of a road roller, comprising:

a first housing surrounding an axis of said wheel;

a hydraulic motor having pistons reciprocatable radially of said axis and disposed in said first housing, and a motor output shaft extending radially of said axis;

a drive shaft extending along said axis within said first housing;

bevel gearing connecting said output shaft to said drive shaft for rotating said drive shaft;

a friction brake mounted on said first housing at one said thereof and connected to said drive shaft for braking the rotation thereof;

a second housing connected to said first housing on the side thereof opposite said friction brake;

planetary gearing in said second housing including a sun gear, a second shaft axially aligned with said drive shaft and carrying said sun gear, planet gears meshing with said sun gear, a planet carrier carrying said planet gears, and a ring gear formed on said second housing and meshing with said planet gears, said second housing and said planetary gearing being disposed at least in part within said wheel;

a toothed coupling interconnecting said drive shaft and said second shaft between said housings; and

a multipartite drive flange connected to said wheel and to said planet carrier for driving said wheel, said planet carrier being subdivided axially into two axially spaced members each of which is journaled by a respective bearing independently of the other on said second housing, said sun gear being disposed between said members.

4,459,876

FLOATING PLANET GEAR SYSTEM

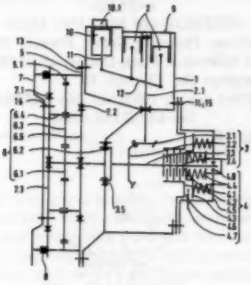
Ramon C. Kohler, and John H. Eichorst, Jr., both of Aurora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00694, 371 Date Sep. 4, 1979, 102(e) Date Sep. 4, 1979, PCT Pub. No. WO81/00899, PCT Pub. Date Apr. 2, 1981

PCT Filed Sep. 4, 1979, Ser. No. 99,818

Int. Cl.³ F16H *3/44, 57/10, 1/28*

U.S. Cl. 74—788 12 Claims



1. A gear assembly (10) comprising:

an inner sun gear (11);

an outer ring gear (19) disposed coaxially of said sun gear;

means (15) defining a plurality of coaxially aligned planet gears having first teeth (16,17) meshing with said sun gear at axially spaced positions to provide the sole radially inward support of said planet gears, and second teeth (18) meshing with said outer ring gear; and

an output ring gear (20) meshing with said first teeth (17) coaxially of said sun gear (11).

4,459,877

POSITIONING APPARATUS FOR INDEX TABLE IN CENTER COLUMN TYPE ROTARY INDEX MACHINE

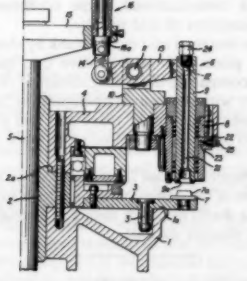
Nobuo Morita, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Chiba, Japan

Filed Sep. 24, 1981, Ser. No. 305,367

Claims priority, application Japan, Oct. 23, 1980, 55-148497

Int. Cl.³ B23Q *17/00*

U.S. Cl. 74—813 L 8 Claims



1. In a center column type rotary index machine having an index table which is intermittently rotated in angular increments during use of the machine to position a jig mounted on the index table at predetermined processing stations and having a vertically movable center column which undergoes upward and downward movement relative to a fixed frame portion of the machine, the improvement comprising:

positioning means operable during vertical upward movement of the center column for effecting positioning of the index table such that the jig is precisely positioned at one of the processing stations, the positioning means comprising a sleeve secured to the fixed frame portion of the machine, a clamp rod slidably mounted in the sleeve to undergo slidable movement toward and away from the index table, means defining a taper portion at the lower end of the clamp rod and a complementary-shaped taper portion on the index table, the two taper portions being positioned such that when the taper portions are vertically aligned with each other the jig on the index table is precisely positioned at the one processing station, a link lever pivotally mounted on the fixed frame portion of the machine and having one lever arm pivotally connected to the upper end of the clamp rod and another lever arm, and spring-biased connecting means pivotally connecting said another lever arm to the center column such that initial upward movement of the center column acts in conjunction with a predetermined spring bias force to effect pivotal movement of the link lever in one direction to cause downward movement of the clamp rod to thereby move the two taper portions into engagement and further upward movement of the center column effects an increase in the spring bias force to effectively clamp the clamp rod taper portion to the index table taper portion.

4,459,878

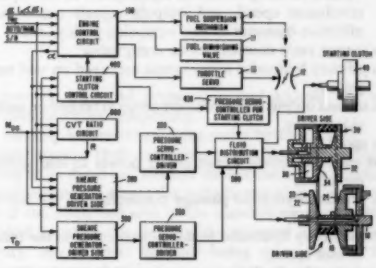
CONTROL SYSTEM AND METHOD FOR A POWER DELIVERY SYSTEM HAVING A CONTINUOUSLY VARIABLE RATIO TRANSMISSION

Andrew A. Frank, Madison, Wis., assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 21, 1982, Ser. No. 380,922

Int. Cl.³ B60K *41/12, 41/18*

U.S. Cl. 74—857 67 Claims



1. A method of controlling the operation of a power delivery system including a prime mover and a continuously variable ratio transmission coupled to said prime mover for delivering power from said prime mover to an output shaft, said prime mover having fuel delivery means for delivering a variable quantity of fuel thereto, said power delivery system being controlled by command means for commanding a desired system performance, the method comprising the steps of:

measuring the actual performance of the power delivery system;

controlling the ratio of said transmission as a function of the desired system performance commanded by said command means and said measured actual system performance, the speed of said prime mover varying as a function of transmission ratio;

predetermining a fuel function defining desired fuel requirements for said prime mover in relation to prime mover operating speed;

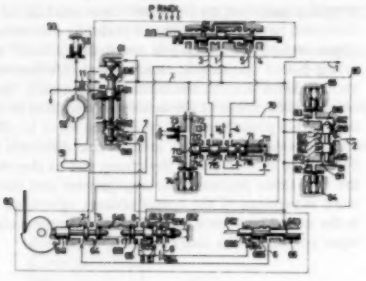
measuring the speed of said prime mover; and

controlling said fuel delivery means only in accordance with said fuel function so that the fuel delivered to said prime mover is determined only by the speed thereof.

4,459,879
TORQUE RATIO CONTROL DEVICE FOR A V-BELT TYPE CONTINUOUSLY VARIABLE TRANSMISSION FOR VEHICLES

Nobuaki Miki, No. 3-47 Okino, Noda-cho, Kariya, Aichi Prefecture, and Shoji Yokoyama, No. 1 Nakata, Kawashima-cho, Anjo, Aichi Prefecture, both of Japan

Filed Mar. 24, 1981, Ser. No. 247,063
Claims priority, application Japan, Mar. 24, 1980, 55-37260
Int. Cl.³ A60K 41/12
U.S. Cl. 74—867 6 Claims



1. A torque ratio control device in a V-belt type continuously variable transmission for vehicles having input and output pulleys mounted respectively on an input and an output shaft and having variable effective diameters wherein the torque ratio between the input and output shafts is continuously controlled by adjusting said effective diameter of each pulley by hydraulic servo means, comprising:

an electric control circuit which inputs accelerator and vehicle running condition signals such as the input pulley revolution speed, and outputs signals controlling said effective diameter of the input side pulley, and

a torque ratio control device comprising:

a primary hydraulic servo means arranged on said input side pulley,

a second output side hydraulic servo arranged on said output side pulley,

a spool,

at least one spring means giving power to said spool in one direction,

a primary hydraulic passage connecting to the one edge of said spool,

a secondary hydraulic passage connecting to the other edge of said spool,

a tertiary hydraulic passage connecting a hydraulic pressure source with said spool,

an exhaust port discharging a hydraulic pressure of said primary hydraulic servo means,

a primary orifice means arranged in said primary hydraulic passage,

a primary solenoid valve means arranged in the spool side of said primary hydraulic passage through said primary orifice means and controlled by said electric control circuit, and

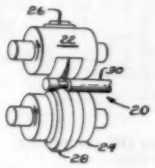
a secondary solenoid valve means arranged in the spool side of a secondary hydraulic passage through a secondary orifice means and controlled by said electric control circuit, wherein the torque ratio pressure control device discharges a hydraulic pressure from said secondary hydraulic passage when said spool is given power in one direction by said spring means,

wherein said spool is controlled in a primary position connecting said primary hydraulic servo with said tertiary hydraulic passage in connection with hydraulic pressure, a secondary position connecting said primary hydraulic servo with an exhaust port, and a tertiary position closing the connection between the primary hydraulic servo and the tertiery hydraulic passage and closing the connection between the primary hydraulic servo and the exhaust port, said primary and secondary hydraulic passages controlled by said two solenoid valve means, said secondary hydraulic servo means always being connected to a hydraulic pressure source and controlling the torque ratio continuously by adjusting the hydraulic pressure supplied to said primary hydraulic servo means, depending on vehicle running conditions.

4,459,880
METHOD OF MAKING DIES

Joseph W. Giffune, Downers Grove; Francis N. Halicky, St. Charles, and Edward J. Fijol, Dolton, all of Ill., assignors to Jernberg Forgings Co., Chicago, Ill.

Filed Sep. 3, 1982, Ser. No. 414,864
Int. Cl.³ B21K 5/20
U.S. Cl. 76—107 R 11 Claims



1. A method for making a roll die having a generally cylindrical cross-section for forming a work piece into a desired configuration on a forging machine, said method comprising the steps of:

forming a flat model blank of said die cut to the dimensions of said die and having a surface milled in accordance with design parameters required to form said work piece into said desired configuration;

making a positive cast of said flat model blank having a contoured surface thereon identical to the milled surface of said flat model blank;

making a plurality of parallel, linear cuts in the milled surface of said flat model blank and the contoured surface of said positive cast parallel to the axis of roll of said die, wherein the depth of said cuts provides radial flexibility in said model blank and in the positive cast thereof;

separately mounting said model blank and said positive cast on said forging machine and filling the plurality of cuts of said model blank and said positive cast with a hard-setting filler material when thus mounted whereby the surfaces of said model blank and said positive cast assume a generally cylindrical cross-sectional shape conforming with the design parameters of said roll die;

verifying the design of said model blank by shaping a malleable work piece with said positive cast on said forging machine, comparing the configuration of the thus formed work piece with the desired configuration, and modifying the surfaces of said model blank and said positive cast as required to provide the desired work piece configuration; and

making an abrader die cast from said positive cast following verification of the design of said model blank and forming a roll blank die by means of electrical discharge machining using said abrader die cast.

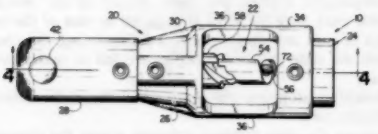
4,459,881
CABLE CORING AND STRIPPING TOOL AND METHOD

Benjamin W. Hughes, Jr., 75 Old Boston Post Rd., Old Saybrook, Conn. 06475

Filed Sep. 8, 1981, Ser. No. 299,730
Int. Cl.³ H02G 1/12
U.S. Cl. 81—9.5 C 13 Claims

1. A coaxial cable stripping and coring tool for use with a

cable having an axially extending cylindrical conductor, a generally cylindrical dielectric core in coaxially surrounding engagement with the conductor, and a generally cylindrical outer sheath in coaxially surrounding engagement with the core, said stripping and coring tool comprising a cutter holder, a cutter mounted in said cutter holder and projecting axially outwardly therefrom, said cutter having a coaxial bore opening through its outer end for receiving the conductor, said bore having a diameter substantially equal to the diameter of the conductor, said cutter having coring means at its outer end including one cutting edge for cutting away a portion of the



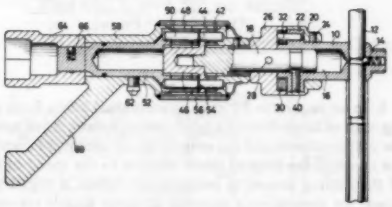
core when said cutting tool is axially rotated in cutting engagement with and relative to the cable, said cutter having stripping means spaced axially inwardly from said outer end and including a further cutting edge means for cutting away a portion of the outer sheath as said cutter is rotated in cutting engagement with and relative to the cable, another cutting edge means for cutting the dielectric core to separate it from the conductor and including another cutting edge extending in axially parallel relation to said bore and defined by a portion of a wall defining said bore, and guide means mounted on said cutter holder and cooperating with the cable for maintaining said tool in generally coaxial alignment with the cable.

4,459,882

GEAR WRENCH WITH TORQUE METER

Mikio Hayashi, 26-5, Toyotama-minami 2-chome, Nerima-ku, Tokyo, Japan

Filed May 19, 1982, Ser. No. 379,831
Int. Cl.³ B25B *23/142*
U.S. Cl. 81—477 **6 Claims**



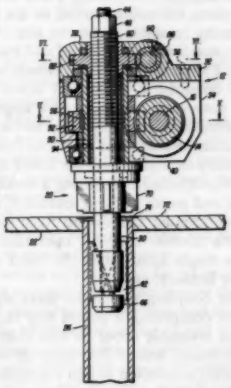
1. A gear wrench comprising:
(a) an input shaft for receiving torque;
(b) a torque amplifying means;
(c) a main shaft for transmitting torque acting on said main shaft to said torque amplifying means, said main shaft having a recess in an end part of said main shaft;
(d) an end part of said input shaft extending into said recess to define, between an outer surface of said input shaft and a wall of said recess, an annular space;
(e) a horseshoe-shaped elastic member for transmitting torque between said input shaft and said main shaft, said member being disposed in said annular space, said member being attached to said input shaft at substantially a first end of said member, said member being attached to said main shaft at substantially a second end of said member, said member being deformable, so that relative rotation between said input shaft and said main shaft occurs when torque is applied between said input shaft and said main shaft, said member being sized and shaped and attached to said input shaft and said main shaft so that under conditions of sufficiently low torque between said input shaft and said main shaft said member is positioned so as to be suspended from contact with said outer surface of said input shaft, said member being deformed upon application of sufficiently high torque between said input shaft and said main shaft so that said member comes into contact with said outer surface of said input shaft; and
(f) a socket operatively connected to said torque amplifying means to transmit torque to a part to be rotated by said wrench.

4,459,883

PORTABLE MACHINE TOOL FOR PREPARING PIPE JOINTS FOR WELDING

William H. Astle, Rancho Cordova, Calif., assignor to Tri Tool, Inc., Rancho Cordova, Calif.

Filed Feb. 4, 1982, Ser. No. 345,744
Int. Cl.³ B23B *5/16*
U.S. Cl. 82—4 C **1 Claim**



1. A portable pipe end preparation tool adapted for use within a confined area comprising:
a tool housing having a top, sides and a bottom;
a mandrel support shaft extending axially through and projecting at its distal end beyond the bottom of the housing;
expandable mandrel means for radially gripping a pipe interior at the distal end area of the mandrel support shaft;
a mandrel actuator for moving the mandrel radially outwardly, the mandrel actuator being connected to the mandrel support shaft and operable from the proximal end of the mandrel support shaft which is located adjacent the top of the housing;
a rotatable tool carrier shaft carried by the housing, the tool carrier shaft extending coaxially with the mandrel support shaft and projecting at its distal end outwardly of the housing, the tool carrier shaft and tool housing being supported for tool feed movement axially along the mandrel support shaft and being rotatable relative thereto;
a tool carrier head connected to the distal end area of the tool carrier shaft and rotatable therewith;
a tool feed drive means connected to the mandrel support shaft and supported by the tool housing so that the tool feed drive means is able to transmit axial feed motion to the housing and tool carrier shaft relative to the mandrel support shaft;
a tool feed actuator shaft connected to the top end area of the housing and extending substantially perpendicular to the tool carrier shaft, the tool feed actuator shaft connected to the tool feed drive means within the housing for transmitting feed motion to the tool feed drive means;
a tool feed actuator connected to the tool feed actuator shaft

and disposed relative to the housing so that the tool actuator lies within the boundaries defined by the outer peripheral sides of the housing with only a limited portion of the tool feed actuator projecting beyond the top of the housing;

a drive motor for the tool including a drive motor housing and an axially extending motor drive shaft;

means for detachably securing the motor housing to the tool housing with the motor drive shaft extending parallel to and below the tool feed actuator shaft when the motor housing and tool housing are connected together;

means for coupling the motor drive shaft to the tool carrier shaft when the drive motor is secured to the housing for transmitting rotary motion of the latter to the former;

said tool feed drive means comprising a ring gear threadedly coupled to the mandrel support shaft at its proximal end area and rotatable about the tool carrier shaft to cause axial motion of the housing relative to the mandrel support shaft; and said tool feed actuator shaft including a rotary pinion gear coupled to the ring gear;

said tool feed actuator comprising a disc-like thumb wheel lying in a plane extending normal to the tool feed drive shaft and being rotatable about the axis of said tool feed drive shaft; said limited portion of said tool feed actuator comprising a rim segment of said thumb wheel;

said housing comprising upper and lower portions connected by removable fasteners; said upper portion supporting and containing said tool feed and drive means, said tool feed actuator shaft, and said tool feed actuator as a single assembly separable from the lower housing portion;

said drive motor housing comprising a manipulating means for the tool and motor housing assembly, and said thumb wheel being oriented and spaced from said drive motor housing in a manner enabling operation of the thumb wheel by a single hand while the hand is grasping the drive motor housing; and

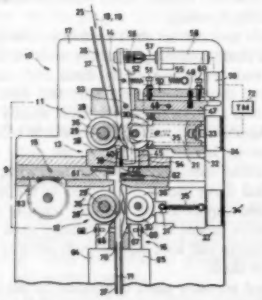
said means for coupling the motor drive shaft to the tool carrier shaft comprising a pinion and ring gear set, the pinion being rotatable about an axis extending coaxially with the rotational axis of the motor drive shaft, and the ring gear being connected to and rotatable coaxially with the tool carrier shaft.

4,459,884

METHOD OF AND APPARATUS FOR PROCESSING A PAIR OF SLIDE FASTENER STRINGERS

Keiichi Yoshieda, Kurobe, and Toyoo Morita, Uozu, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,209
Claims priority, application Japan, Dec. 29, 1981, 56-215848
Int. Cl.³ B26D *5/28*
U.S. Cl. 83—42 **16 Claims**



1. A method of processing a pair of continuous slide fastener stringers including a plurality of longitudinally spaced chains of partly interengaged coupling elements with a plurality of sliders mounted respectively thereon, and end stops mounted on the opposite ends of each of the chains, there being an element-free space between the successive chains, the method comprising the steps of:

(a) feeding the slide fastener stringers along a path at a first speed;

(b) sensing the arrival at a point of the leading ends of the slide fastener stringers while they are being fed at the first speed;

(c) feeding the slide fastener stringers at a second speed higher than said first speed upon said arrival of the leading ends of the slide fastener stringers;

(d) temporarily holding the slider of one of the moving chains until after the same is engaged by one of the end stops of said one chain, thereby fully closing the chain while the slide fastener stringers are fed at said second speed;

(e) thereafter stopping the feeding of the slide fastener stringers; and

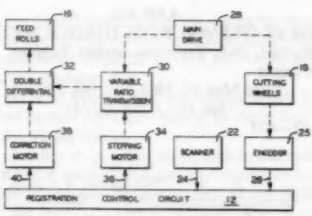
(f) severing the slide fastener stringers across the element-free space between said one coupling element chain and the following coupling element chain.

4,459,885

REGISTRATION CONTROL FOR A LABEL CUTOFF APPARATUS

Nelson Friberg, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 208,712, Nov. 20, 1980, Pat. No. 4,384,500.
This application Jan. 10, 1983, Ser. No. 456,666
Int. Cl.³ B26D *5/32*; G06H *7/00*
U.S. Cl. 83—74 **3 Claims**



1. In an apparatus for cutting individual labels from a moving strip of labels having a label cutting means, drive means for the cutting means and the strip of labels, means for controlling the speed of the strip of labels relative to the speed of cutting of the cutting means to maintain the labels in registry, with means for generating a plurality of status signals representing the condition of the means for controlling, and means for indicating the status of the means for controlling comprising:

means responsive to selected ones of the status signals for forming message signals corresponding to said status signals;

means for storing a plurality of said message signals;

means for exiting corresponding message signals from said means for storing; and

means responsive to said exiting message signals for visually indicating the status of the means for controlling.

4,459,886

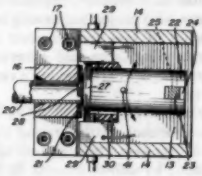
SHEARING APPARATUS TO CUT NOTCHES AT THE END OF PIPES AND THE LIKE

Rolland Belzil, 7630 Milan Blvd., Brossard, Canada J4Y 1H5

Filed Apr. 22, 1982, Ser. No. 370,978
Int. Cl.³ B26D *3/14*; B23D *21/00*
U.S. Cl. 83—178 **9 Claims**

1. A shearing apparatus adapted to cut notches at one end of a tubular member and comprising a first and a second support,

a first and a second complementary die member secured to said first and said second supports, respectively, and a base and a pivot connection defining a pair of perpendicular intersecting pivot axes and pivotally attaching the second support on the base; said first support being constructed and arranged to operatively carry one end of the tubular member, the first die member including die sections positioned in predetermined radially outward directions relative to the tubular member, the



second support being constructed and arranged for pivotal displacement relative to the tubular member in said predetermined radially outward directions, and said second die member being operatively carried by the second support and shearingly engaging the tubular member upon bodily displacement with the second support in said predetermined radially outward directions toward co-operative engagement with said die sections.

4,459,887

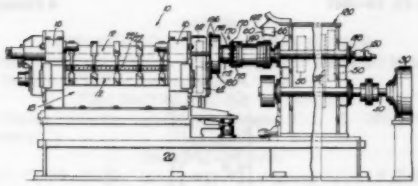
ROTARY SHEAR OF VARIABLE CUT LENGTHS

James D. Ingham, Thomaston, Conn., assignor to The Hallden Machine Company, Thomaston, Conn.

Filed Dec. 7, 1982, Ser. No. 432,648

Int. Cl.³ B23D *25/12*

U.S. Cl. 83—311 **4 Claims**



1. In a rotary shear, the combination of a pair of drivingly connected rotary shear drums to cut stock, a power drive for said drums, including a pair of meshed non-circular driving and driven gears, and a coupling with a rotary axis and driving and driven companion members having annular surfaces about said axis normally in an interference fit of a magnitude to transmit without slippage torque in excess of maximum torque required for stock cutting operation of said drums, with said driving and driven coupling members being drivingly connected with said driven gear and one of said drums, respectively, and means for applying pressurized fluid to said coupling members at their annular interface to relieve the interference thereat and permit said driving coupling member to turn relative to said driven coupling member on jogging said power drive for angularly adjusting said driven gear relative to said drums.

4,459,888

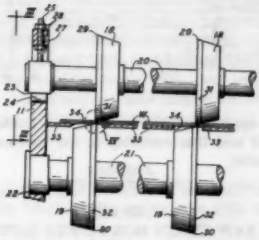
NON-CONTACTING SLITTER

Kenneth G. Frye, South Egremont, Mass., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 099,572, Dec. 3, 1979, abandoned. This application Jan. 21, 1982, Ser. No. 341,563

Int. Cl.³ B23D *19/04*; B26D *1/24*

U.S. Cl. 83—507 **5 Claims**



1. In a slitter for slitting springy compressible paper web having a K_2 factor under 100, and having a pair of cooperating circular rotary members:

said members having cooperating peripheral web severing continuously circular edges having severance points at their closest approach to one another is spaced non-contacting radial opposition for engaging therebetween a running paper web to be slit;

peripheral surfaces on said members sloping on respective shallow angles away from said edges and said edges overlapping not in excess of 0.010 inch;

and means mounting said members for maintaining a spacing between said severance points no greater than 30% of the thickness of the running paper web and so related to the plane and the physical properties of said web as to cause radial thrusting compression pinching of the web to as nearly as practicable equal extent indentation from each face of the web by and between said severance points, so that fiber failure by separation fracture is caused, starting substantially at the center of the thickness of the web in substantially radial alignment with said severance points, due to the intense internal stresses imposed on the web by the severance points progressively along a predetermined severance line in the continuous severance of said running web.

4,459,889

SHEAR

James A. Holton, Richmond, and James C. Inman, Braithwell, both of England, assignors to Davy-Loewy Limited, Sheffield, England

Filed Dec. 18, 1981, Ser. No. 332,155

Claims priority, application United Kingdom, Dec. 23, 1980, 8041134

Int. Cl.³ B23D *15/08*

U.S. Cl. 83—597 **13 Claims**

1. A shear mechanism comprising:

a. a movable first shear blade assembly, which includes a shearing face and an oppositely directed and generally similarly shaped bearing face both extending over substantially the entire length of said blade assembly;

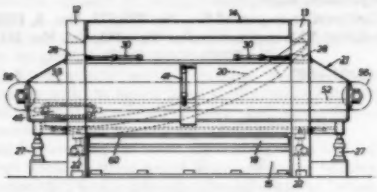
b. a second blade assembly cooperating with said first assembly to shear a workpiece therebetween;

c. a fixed support spaced from said first assembly and extending substantially over the length of said first assembly;

d. a carriage located operatively between, and engaging, said support and said bearing face, said carriage contacting said bearing face over a limited length thereof; and

e. means for moving said carriage progressively along the length of said bearing face;

f. whereby said shearing face is urged progressively into shearing engagement with said workpiece, and shearing



force is applied by said carriage to a limited part of the length of said first assembly at the location of shearing engagement.

4,459,890

SAW CHAIN FOR POWER SAW

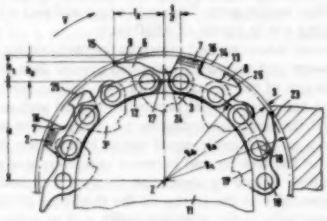
Hans Dolata, Waiblingen; Werner Meyle, Murr; Adam Keibert, Waiblingen, and Karl Nitschmann, Schorndorf, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Continuation of Ser. No. 193,895, Oct. 6, 1980, abandoned. This application Nov. 4, 1982, Ser. No. 439,528

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002115

Int. Cl.³ B27B *33/14*

U.S. Cl. 83—834 **14 Claims**



1. A saw chain for a power-driven chain saw useable in a plunge-cutting mode of operation and having a cutter bar defining a track for accommodating and guiding the saw chain as it moves along the cutter bar, the cutter bar having an outer end defining a predetermined curvature for the guide track, the saw chain comprising:

a plurality of cutting links, a plurality of connecting links, and a plurality of driving links, the links being pivotally interconnected by rivets or the like to define the saw chain, the cutting links including:

a plate-like body having a rearward wall defining a rearward opening for accommodating one of the rivets;

the rearward wall having an upwardly extending bent-over top portion defining the cutting tooth of the cutting link and a downwardly extending portion defining a rearward bottom edge of the cutting link, the cutting tooth being elongated and having a forward end defining the cutting edge thereof;

a forward wall having a downwardly extending portion defining a forward bottom edge of the cutting link;

the portion of said rearward wall beneath said cutting tooth and the forward wall conjointly defining the body of said cutting link;

at least a portion of said driving links each being defined by a plate-like body having a forward opening for accommodating said one rivet whereby said driving link is pivotally connected to one of said cutting links;

said driving link having a rearward opening for accommodating a further rivet for connecting said driving link to another one of the links;

said driving link further having a rearward trailing edge directly behind said last-mentioned rearward opening when viewed in the direction of movement of the saw chain along the cutter bar;

said body of the above-mentioned driving link having a safety projection extending upwardly and rearwardly out beyond said rearward trailing edge of the plate-like body of the driving link in a direction opposite to the direction of said movement, said projection having an outermost tip spaced rearwardly of said further rivet and defining a moment arm extending from said outermost tip to said further rivet, said moment arm having a center of rotation at said further rivet;

said cutting edge and the outermost tip of said projection tracing respective arcuate paths around the outer end of the cutter bar as the saw chain moves therearound; the arcuate path traced by said outermost tip having a larger radius of curvature than the arcuate path traced by said cutting edge thereby causing said outermost tip to strike the wood workpiece before said cutting edge and to apply a force against said outermost tip when the operator thrusts the cutter bar into the workpiece during the plunge-cutting mode of operation; said arcuate paths being radially spaced from each other a predetermined radial distance; the application of said force to said outermost tip and its movement through at least part of said radial distance about said moment arm causing a rotating moment to be applied to said drive link to rotate the same about said further rivet and act as a lever to lift said one rivet and said cutting link connected thereto in a direction away from the cutter bar thereby causing the rearward end of said top portion of said cutting link to move up against the base of the kerf in the workpiece to limit the extent to which said cutting edge can penetrate into the workpiece whereby unwanted kickback action is reduced.

4,459,891

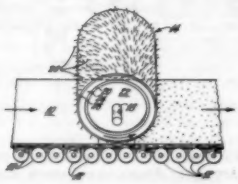
APPARATUS FOR PUNCHING HOLES IN BOARDS

Jared R. Kies, Perrysburg, and Steve A. Oravecz, Maumee, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 23, 1982, Ser. No. 421,923

Int. Cl.³ B26F *1/24*

U.S. Cl. 83—867 **4 Claims**



1. Apparatus for punching holes in boards in a continuous process, said apparatus comprising a rotatably mounted punching roll having a sleeve of elastomeric material and a plurality of elongated hole punching members yieldably mounted therein for pivotal movement in planes perpendicular to an axis of rotation of the roll, means for supporting and moving a board past said punching roll into and out of operative engagement with said hole punching members, said hole punching members extending through said sleeve and projecting from an outer surface thereof, and each of said hole punching members in a normal mounted position being inclined, from a radial line of the punching roll extending through a mounted end of the

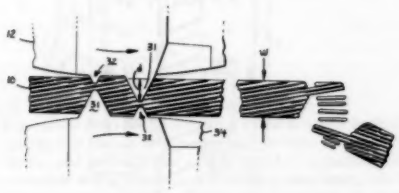
hole punching member, in such a manner as to dispose a free end of the hole punching member forwardly of the mounted end in the direction of rotation of the punching roll, through a mounting angle such that the hole punching member extends perpendicularly to the board at the first contact of the free end therewith, the hole punching member remaining perpendicular to the board all during entry thereinto and withdrawal therefrom, being pivoted backwardly on the punching roll through twice said mounting angle during entry into and withdrawal from the board as the punching roll rotates and the board translates, and being restored to normal mounted position, upon withdrawal from the board, solely by said elastomeric sleeve.

4,459,892

METHOD AND APPARATUS FOR SEVERING STRANDED CABLE

Mieczyslaw Budzich, Lexington, and Forest G. Fitz, Jr., West Columbia, both of S.C., assignors to Nassau Recycle Corporation, Staten Island, N.Y.

Filed May 17, 1982, Ser. No. 378,698
Int. Cl.³ B23D *25/02*
U.S. Cl. 83—880 **5 Claims**



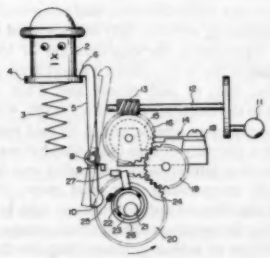
1. A method of severing a cable of width w formed by strands twisted together with a helical lay of a predetermined lay length and with the method comprising the steps of cutting a first notch of depth d in the cable at a first location and cutting a second notch of a depth in excess of w—d in the cable at a second location longitudinally spaced from the first location a distance such that for the predetermined lay length none of the strands extends helically through the first and second locations unsevered by at least one of said notches.

4,459,893

INSTANTANEOUS ROTATION DEVICE

Yoshio Kitamura, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Sep. 28, 1982, Ser. No. 426,058
Claims priority, application Japan, Oct. 2, 1981, 56-146031[U]
Int. Cl.³ G10F *1/06*
U.S. Cl. 84—95 C **9 Claims**



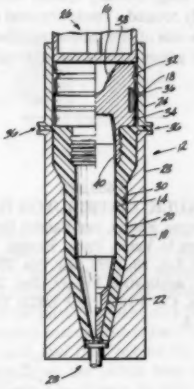
1. An instantaneous rotation device comprising: a gear (20) driven by a power source; an abutting portion (25) formed on said gear; a dog (23) rotatably provided to said gear and having a projection (24); means (26) for biasing said projection (24) into abutment with said abutting portion (25); a stationary limiting member (27) projecting into a path of rotation of said projection (24); means (22) for eccentrically moving said projection (24) out of engagement with said stationary limiting member (27); and a movable member (5, 35) biased to project into the path of rotation of said projection (24) ahead of said limiting member (27) in the direction of rotation of said gear (20); wherein as said projection (24) abuts against said limiting member (27), said biasing means (26) is energized, and as said projection (24) is released from said limiting member (27) by said eccentrically moving means (22), said projection (24) instantaneously rotates said movable member (5, 35) by making use of the energy stored in said biasing means.

4,459,894

MOLD-IN-PLACE SABOT PROJECTILE

J. David Bunch, Marion, Ill., assignor to Olin Corporation, Stamford, Conn.

Filed Sep. 13, 1982, Ser. No. 416,828
Int. Cl.³ C06B *21/00*; F42B *33/10*
U.S. Cl. 86—1 R **10 Claims**



1. A process for manufacturing a sabot projectile which comprises the steps of:

A. inserting a projectile core into a pusher plug in alignment with said plug;

B. inserting said core and plug into a mold in axial alignment with said mold, said core being supported solely by said pusher plug;

C. molding a unitary sabot about said core while said core is held;

D. holding said core and plug in said inserted aligned position during said molding; and

E. removing said core-plug-molded sabot combination from said mold.

4,459,895

RECOIL REDUCING DEVICE FOR FIREARMS

Vincent E. Mazzanti, 1020 Prospect St., La Jolla, Calif. 92037

Filed Oct. 5, 1981, Ser. No. 308,440
Int. Cl.³ F41C *21/18*
U.S. Cl. 89—14 C **6 Claims**

1. A recoil reducing device for a firearm having a gun barrel with a front end comprising:

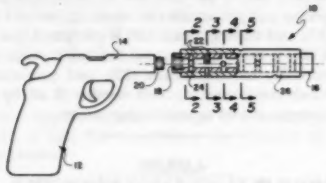
an elongated tubular member having an x-axis;

means on one end of said tubular member for detachably

connecting said tubular member to the front end of the gun barrel of a firearm;

means for causing expanding gases, that are released during the firing of a bullet form a firearm, to travel axially along the length of said tubular member in a helical sprial path comprising:

a plurality of disc-shaped baffle members, said baffle members each having a substantially half-moon configura-



tion with a cut-out portion of their arcuate center large enough to allow a fired bullet to pass thereby without impeding its travel, said baffle members being longitudinally spaced a predetermined distance from one another within said elongated tubular member, each of said successive longitudinally spaced baffle members being sequentially rotated a predetermined number of degrees about the x-axis of said tubular member to form a helical passage for gasses passing through said tubular member.

4,459,896

HYDRAULIC DISTRIBUTOR DEVICES

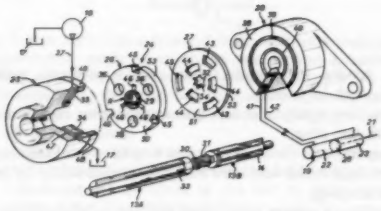
Jean L. R. Dauvergne, Fosses, and Patrice Bertin, Paris, both of France, assignors to Valeo, Paris, France

Filed Jun. 18, 1981, Ser. No. 274,781

Claims priority, application France, Jun. 23, 1980, 80 13841

Int. Cl.³ F15B *9/10*; B62D *5/08*

U.S. Cl. 91—375 A **4 Claims**



1. In a hydraulic distributor device comprising two adjacent members movable relative to one another along a planar sliding interface, said members having passages for the circulation of fluid under pressure, said passages opening on to said interface and being operable to communicate with one another or to be isolated from one another, depending on the relative position of said member; the improvement comprising at least one narrow groove provided superficially in at least one of said members along said interface, said groove having an open contour, both of the two ends of said groove opening either to the outer periphery or to the inner periphery of the member having said groove, all portions of said at least one groove communicating with regions of substantially the same pressure, so as to minimise or eliminate a thrust generated by the fluid pressure perpendicularly to said interface.

4,459,897

POWER STEERING DEVICE

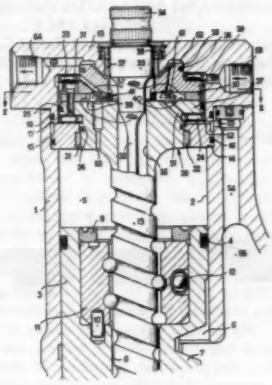
Juan S. Bacardit, Barcelona, Spain, assignor to Bendiberica, Barcelona, Spain

Continuation of Ser. No. 125,720, Feb. 28, 1980, abandoned, which is a continuation of Ser. No. 854,560, Nov. 25, 1977, abandoned. This application Oct. 26, 1981, Ser. No. 314,807

Claims priority, application Spain, Nov. 29, 1976, 453991; Nov. 29, 1976, 453992; Feb. 15, 1977, 455906; Apr. 14, 1977, 457777

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—375 A **24 Claims**

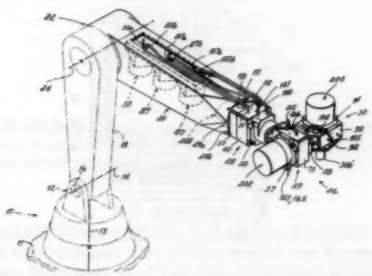


1. A control valve, particularly for power steering with an actuating member (33) and an actuated member (20) rotatable relative to each other and having a rest position into which they are positioned in the absence of actuating forces, the control valve comprising a disc-shaped valve chamber (39, 40, 30) formed by said members (20, 33) and having an inner circumferential wall and end walls (39, 40) with fluid channels opening therein through respective openings, namely supply channels (57) for fluid supply, drain channels (61) for fluid drain, first working channels (50) for connection with a first working chamber (5) of a fluid motor and second working channels (51) for connection with a second working chamber (6) of the fluid motor, a rotor (41) arranged within and rotatable relative to said disc-shaped valve chamber, said rotor serving for selectively connecting said first or second working channels with said drain channels, said rotor being coupled to one of said actuating member (33) and actuated member (20), and further comprising, for equilibration of hydraulic load onto both sides of the rotor, a mirror image arrangement of the openings (56*a*, 56*b*) of said supply and drain channels and recesses (66) in the confronting end walls (39, 40) of said disc-shaped valve chamber, characterized by said rotor (41) being star-like with a plurality of legs (43*a*, 43*b*) having substantially radially extending lateral faces and radial end faces, the end faces sealingly cooperating with said inner circumferential wall of said disc-shaped valve chamber, said lateral faces of said legs facing the openings of said mirror image arrangement, and lateral edges of said legs controlling the fluid flow and defining within said disc-shaped valve chamber operative fluid chambers (48*a*, 48*b*), said working channels communicating with said operative fluid chambers.

4,459,898
STREAMLINED MULTI-AXIS ROBOT WRIST ASSEMBLY WITH PARTIALLY ENCLOSED HYDRAULIC AND ELECTRICAL LINES TO MINIMIZE THE WRIST ENVELOPE

Martin J. Harjar, Vermilion, and Jeffrey S. Noss, Bay Village, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Dec. 9, 1981, Ser. No. 328,912
Int. Cl.³ F01B *1/02*
U.S. Cl. 92—61 **8 Claims**



1. A wrist assembly for a robot comprising:

a first rotary fluid actuator having a first actuator body with an exterior and an output member movable relative to said body, said first actuator output member including a shaft rotatable within a bore in said first actuator body, said first actuator body having at least one chamber of variable volume which when input with pressurized fluid causes said output member to move relative to said first actuator body, said first actuator body having a first fluid passage therein interconnecting said chamber with the exterior of said body through which pressurized fluid is input to said chamber to move said output member relative to said first actuator body;

a second fluid actuator having a second actuator body with an exterior and an output member movable relative to said second actuator body, said second actuator body having at least one chamber of variable volume which when input with pressurized fluid causes said second actuator output member to move relative to said second actuator body, said second actuator body having a second fluid passage therein interconnecting said second actuator chamber with the exterior of said second actuator body through which pressurized fluid is input to said second actuator chamber to move said second output member relative to said second actuator body;

means mounting said first actuator output member to said second actuator body to move said second actuator body relative to said first actuator body when pressurized fluid is input to said first actuator chamber;

a first fluid conduit connected to said first passage to facilitate input of pressurized fluid to said first actuator chamber to move said first actuator output member, and in turn said second actuator body, relative to said first actuator body, said first fluid conduit located externally relative to said first and second actuators; and

means to transport pressurized fluid to said second passage for input to said second actuator chamber to move said second actuator output member relative to said second actuator body, including:

(a) a third fluid passage through, and internal relative to, said first actuator, said third passage having an inlet and an outlet and being unconnected to said first passage and said first actuator chamber, said third fluid passage including (i) a first passage in said first actuator output member connected to said outlet, (ii) a second passage in said first actuator body connected to said inlet, and (iii) a fluid coupling for interconnecting said two last-mentioned passages independent of the rotary position of said shaft relative to said first actuator body;

(b) a second fluid conduit connected to said inlet, said second fluid conduit being located externally relative to said first and second actuators; and

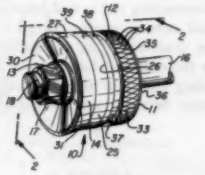
(c) a third fluid conduit connected between said outlet and said second fluid passage, said third fluid conduit being located externally relative to said first and second actuators;

whereby pressurized fluid input to said second fluid conduit is transported to said third fluid conduit for input to said second actuator chamber through said second passage to actuate said second actuator via a fluid path which includes an internal passage in said first actuator.

4,459,899
SINGLE ACTING RECIPROCATING PUMP PISTON

Murl R. Richardson, 8112 Bangor, Fort Worth, Tex. 76116

Continuation of Ser. No. 138,458, Apr. 8, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,067
Int. Cl.³ F01B *31/10*
U.S. Cl. 92—159 **9 Claims**



1. A piston assembly for use in a cylinder liner of a single acting reciprocating pump utilizing a fluid medium behind the piston assembly as a piston assembly lubricant; said piston assembly includes a rigid piston element having a center opening for mounting of the piston element on a piston rod, a radially outwardly extended annular piston base having a rear face in communication with said fluid behind the piston assembly and a hub extension from the piston base for mounting an annular piston seal with a resiliently flexible material annular seal lip; a peripheral surface means on said piston base sized to be a sliding fit within the cylinder liner of said reciprocating pump; a plurality of grooves in said peripheral surface means in fluid communiction with the fluid at the rear face of said piston element for optimal flow of fluid to the piston peripheral surface during back strokes of the piston assembly; and, wherein an annular beveled edge is provided at the piston rear face in fluid communication with said grooves as an aid to optimal flow of fluid to the piston peripheral surface during back strokes of the piston assembly.

4,459,900
HEAT INSULATED PISTON ASSEMBLY AND METHOD OF ASSEMBLING

Gary A. LaBouff, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

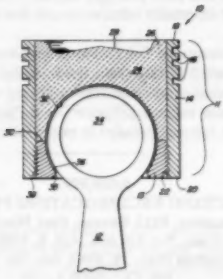
Filed Jul. 6, 1981, Ser. No. 280,403
Int. Cl.³ F16J *1/14*
U.S. Cl. 92—189 **4 Claims**

1. An improved heat insulated piston assembly for an internal combustion engine wherein the improvement comprises:

(a) a piston formed of a sleeve and a heat insulated core pre-stressed by an interference fit into said sleeve thereby producing an axisymmetric stress state about the central axis of said sleeve, said core having a first exposed end positioned flush with one end of said sleeve and having a

second end completely surrounded by said sleeve which contains a hemi-spherically shaped cavity;

(b) a connecting rod having a spherical ball shaped end matable in said hemi-spherically shaped cavity of said core, said spherical ball shaped end having a slightly smaller diameter than the diameter of said hemi-spherically shaped cavity; and



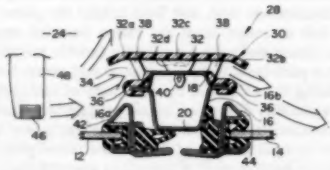
(c) retaining means for securing said spherical ball shaped end of said connecting rod in said hemi-spherically shaped cavity of said core to enable forces developed on said piston to be transferred in an essentially symmetrical fashion over the entire surface area of said spherical ball while providing both low unit contact pressures and low surface stresses between said core and said connecting rod.

4,459,901

REAR SIDE WINDOW DEMISTER

Takeaki Watanaby, Ebina, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 27, 1982, Ser. No. 402,346
Claims priority, application Japan, Aug. 5, 1981, 56-123385
Int. Cl.³ B60S *1/54*
U.S. Cl. 98—2.04 **7 Claims**



1. A rear side window demister for an automotive vehicle having a side demister nozzle installed on or adjacent a front piller, comprising:

a center pillar located between a front side window and a rear side window, said center pillar being formed from inner and outer panels which are joined together to form a box-like horizontal section having front and rear end flanges where the inner and outer panels are secured together; and

a pillar garnish attached to said center pillar for concealing said center pillar from view;

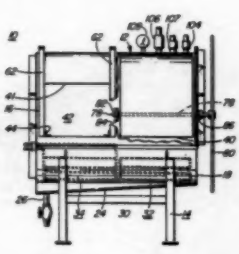
said pillar garnish cooperating with said center pillar to define therebetween a space which serves as a demister duct for conveying air directed from said side demister nozzle to the rear side window, said pillar garnish having the form of a generally flat cover plate placed over said center pillar and spaced from the center pillar to define therebetween said space, a pair of anchors fixedly attached to the respective front and rear end flanges, and a plurality of connecting arms interconnecting said anchors and said cover plate.

4,459,902

DEEP FAT COOKING APPARATUS

Raymond H. Angold, 28 Wallace Pl., Kingston, Ontario, Canada (K7M 6B9)

Filed Sep. 23, 1982, Ser. No. 421,835
Claims priority, application Canada, Nov. 23, 1981, 390642
Int. Cl.³ A47J *27/00, 27/08, 37/12*
U.S. Cl. 99—330 **7 Claims**



1. Apparatus for the cooking of foods comprising: a chamber for holding a volume of cooking oil and defining a cooking region therein for receiving food to be cooked; the chamber including a wall having an opening therethrough for placement of food into the cooking region of the chamber and removal of the food therefrom, means for supporting foodstuffs to be cooked within said chamber and means within said chamber for effecting relative movement between the foodstuff supporting means and the upper surface of the volume of cooking oil and movable between (a) a first position wherein, in use, with a selected amount of cooking oil in said chamber, the oil substantially surrounds the food to be cooked; and (b) a second position wherein the upper level of the selected amount of oil is below both the lower extremities of said opening and the food; said opening in said wall and said means for supporting foodstuff to be cooked within said chamber being positioned and arranged such that, in use, the food may be inserted and removed from the cooking region of the chamber in a lateral or horizontal direction; said cooking chamber being capable of withstanding internal pressures during the cooking of the food, and movable closure means associated with said opening in said wall and sealingly engageable with the chamber to prevent leakage when under pressure during cooking.

4,459,903

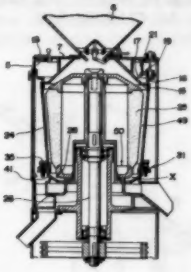
VERTICAL ABRASIVE ROLL RICE POLISHING MACHINE

Soichi Yamamoto, 813 - 17 Oazo Tendou Kou, Tendou-Shi, Yamagata-Ken, Japan

Filed May 6, 1982, Ser. No. 375,443
Claims priority, application Japan, Jun. 19, 1981, 56-95590
Int. Cl.³ B02B *3/00, 7/02*
U.S. Cl. 99—519 **5 Claims**

1. A vertical abrasive roll rice polishing machine comprising a vertical cylindrical framework assembly, a vertical rotary shaft extending within said framework assembly in coaxial relation therewith and rotatably journaled therein, a vertically movable polishing cylinder mounted in said framework assembly in peripherally spaced and coaxial relationship to the framework assembly and surrounding said shaft in peripherally spaced relationship thereto, a vertical abrasive roll mounted on said shaft for rotation therewith within said polishing cylinder in peripherally spaced relation thereto to define an annular polishing chamber therebetween, transmission means mounted at the lower end of said shaft and drivingly connected to an external drive source to impart rotation to said shaft, a hopper

at the top of said framework for feeding rice through an opening therein to said polishing chamber, and cooperating means



on said polishing cylinder and said abrasive roll, respectively, defining a variable discharge passage for polished rice at the bottom of said polishing chamber.

4,459,904

APPARATUS FOR BINDING BALES IN A BALING PRESS

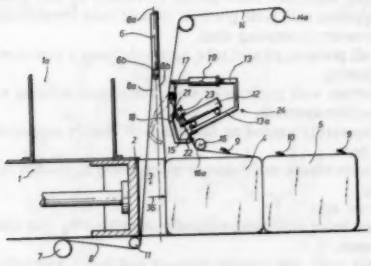
Karl Probst, Solingen; Kurt Hüfken, Krefeld, and Zvonko Gori canec, Düsseldorf, all of Fed. Rep. of Germany, assignors to Lindemann Maschinenfabrik GmbH

Filed Jan. 24, 1983, Ser. No. 460,362

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1982, 3202183; Dec. 21, 1982, 3247147

Int. Cl.³ B65B *13/28*

U.S. Cl. 100—11 **19 Claims**



1. In a baling press for producing bound bales of pressed material, said press comprising a pressing duct, a pressing plunger reciprocable in said duct between rear and forward end positions for pressing bales successively in said duct and binding means for forming at least one wire band around said bale, said bale being pressed forwards by said plunger, into a loop of said wire, said binding means including a first storage roll for delivering an upper wire, a binding head, first and second guide rollers for guiding said upper wire, means journalling said guide rollers, the second above and the first below said binding head, a second storage roll for delivering a lower wire which in operation of said binding means remains connected to said upper wire by a twist, a reciprocable binding needle which reciprocates along a path which passes through said duct and in operation raises said lower wire to form a wire loop behind a finished bale pressed in said duct, said binding head including a twisting device for producing two twists between said upper wire and a portion of said loop adjacent said upper wire and a cutting device for cutting said wire between said two twists, the improvement wherein the distance between said first guide roller and said forward position of said plunger is at least equal to the distance between said first guide roller and said cutting device and wherein said binding means includes at least one catching finger and means for moving said finger to act transversely upon said upper wire and said portion of said lower wire while said upper wire is held taut between said first and second guide rollers and said loop is held taut by said binding needle, said finger being operative to bring together said upper wire and said portion of said loop prior to the production of said twists by said twisting device.

4,459,905

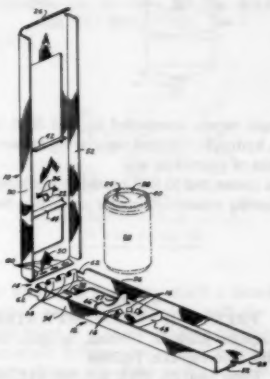
CAN CRUSHER

Richard C. Wilson, Champlin, Minn., assignor to Tie Down Engineering, Inc., Atlanta, Ga.

Filed Jul. 26, 1982, Ser. No. 402,090

Int. Cl.³ B30B *9/32*

U.S. Cl. 100—35 **14 Claims**



11. A method of axially crushing an empty can of the type having a recessed top and bottom and a pour hole in the top adjacent its periphery, the hole appearing when a closure tab is opened to empty the can, comprising:

(a) providing a first member hingeably connected to a second member;

(b) inserting a pour hole engaging means carried by the first member into the pour hole;

(c) inserting a bottom protrusion carried by the second member into the recessed bottom of the can so that the can is retained between the two members; and

(d) hingeably compressing the two members to axially crush the can.

4,459,906

AEROSOL CAN EVACUATOR AND COMPACTOR

Cary D. Cound, La Puente, and Joseph A. Vivona, Santa Ana, both of Calif., assignors to American Home Products Corp., New York, N.Y.

Filed Nov. 29, 1982, Ser. No. 445,340

Int. Cl.³ B30B *15/30*

U.S. Cl. 100—45 **2 Claims**

1. Apparatus for evacuating and compacting aerosol cans comprising:

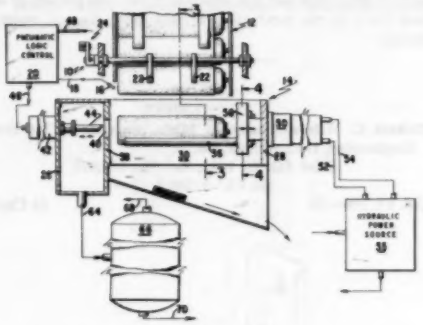
A. a feed chute;

B. means connected to said feed chute to sense the orientation of a can and to feed properly oriented cans;

C. a crushing mechanism connected to receive the cans from said feed chute;

D. a hydraulic ram connected to said crushing mechanism and adapted to move to a first position where a can is evacuated and to a second position whereby a can is compacted;

E. a puncturing means reciprocably connected to said crushing mechanism whereby in a first position a can may be loaded or removed and in a second position a can is punctured;



F. air logic means connected to said feed chute, sensing means, hydraulic ram and puncturing means to control the sequence of operation; and

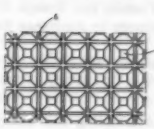
G. means connected to said crushing mechanism to receive the contents evacuated from a can when punctured.

4,459,907

PRESS FOR REMOVING WATER

Frey V. Sundman, Karbula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Aug. 30, 1982, Ser. No. 412,768
Claims priority, application Finland, Sep. 16, 1981, 812885
Int. Cl.³ B30B *9/24*
U.S. Cl. 100—118 **4 Claims**



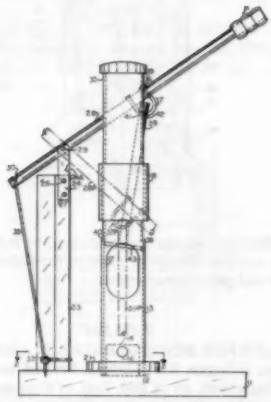
1. A press for removing water wherein the material to be treated is conveyed together with a wire or felt pervious to water through a press nip formed by opposite surfaces, characterized in that it comprises compressible means for conveying the material to be treated, said means having several compression chambers opening out against the wire or felt pervious to water, said compression chambers being in the form of a truncated pyramid with the long parallel side of the truncated pyramid abutting the wire or felt pervious to water.

4,459,908

CAN COMPACTOR

Anthony H. Sierk, 904 Palm Trail, Delray Beach, Fla. 33444

Filed Sep. 19, 1983, Ser. No. 533,804
Int. Cl.³ B30B *9/32*
U.S. Cl. 100—218 **6 Claims**



1. A can compactor comprising,

A. a base comprising walls defining a substantially horizontal groove in said base,

B. an upwardly extending tube means,

a. the bottom of said tube means removably fitting into and being restrained from lateral movement by said groove,

b. opposite side wall portions of said tube means defining lever-arm-accepting slots,

c. wall portions of said tube means defining a can-receiving opening,

d. bottom wall portions of said tube means defining a can-ejection aperture,

C. an upwardly extending fulcrum post fixedly supported on said base,

D. fulcrum means, said fulcrum means being supported on said post,

E. a lever arm,

a. said lever arm being pivotally supported by said fulcrum means,

b. said lever arm passing through and being upwardly and downwardly movable within said slots,

F. a thrust member pivotally attached to said lever arm, said thrust member being movable within said tube means,

G. a crushing block, said block being attached to the lower extremity of said thrust member thereby compacting cans placed within said tube upon the lowering of said lever arm.

4,459,909

MOLD SUPPORTING ARRANGEMENT IN A PRESS

Shozo Takagi, 950, Nakayama-cho Nishi 2-chome, Nara, Japan

Filed Apr. 2, 1982, Ser. No. 364,676
Int. Cl.³ B30B *15/06*
U.S. Cl. 100—295 **1 Claim**

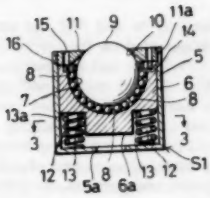
1. A mold supporting arrangement for a press comprising:

a press bolster having a plurality of spaced seating holes formed in an upper surface thereof;

a plurality of bearing units seated in a selected number of said plurality of spaced seating holes, each of said bearing units including a casing having a bottom wall and side wall, a seat body having a hemispherical concave seat formed in a top wall thereof, a layer of small steel balls disposed on said concave seat, a main large ball seated on said layer of small steel balls for free rotation in every direction, and a cover plate detachable to said casing and

having an opening window through which a top part of said main ball retractably protrudes, said seat body having a plurality of vertically extending cylindrical chambers formed in a bottom wall thereof; and

a selected number of compression coil springs cooperating with one another to give an adjusted spring force for



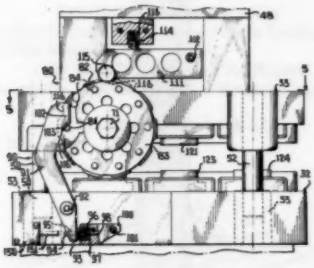
urging said seat body upward, each coil spring having one end seated in one of said cylindrical chambers in said seat body and the other end of each of said coil springs seated on said casing bottom said seat body being elastically slidable up and down in said casing within a predetermined range by means of said selected number of compression coil springs.

4,459,910

EMBOSSING MACHINE WITH INDEXING MECHANISM

William L. Taube, Torrance, Calif., assignor to Metal Box Can, Inc., Torrance, Calif.

Filed Sep. 30, 1982, Ser. No. 429,664
Int. Cl.³ B41J *1/46*
U.S. Cl. 101—18 **41 Claims**



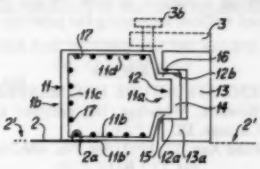
1. An embossing machine comprising a pair of die elements, means for relatively reciprocating said pair of die elements to move the same between a first generally open position and a second generally closed position, first and second of said pair of die elements carrying respective first and second cooperative means for embossing an article disposed therebetween upon the relative movement of said pair of die elements from said first generally open position toward said second generally closed position, said first of said pair of die elements carrying a rotatable shaft, said first cooperative embossing means being a plurality of embossing stamps carried by said rotatable shaft, means for indexing said rotatable shaft during each relative movement of said pair of die elements from said second position toward said first position to sequentially position the embossing stamps into cooperative relationship with the said second embossing means whereby upon each relative movement of said pair of die elements from said first generally open position to said second generally closed position an article is embossed therebetween, said indexing means including an indexing wheel carried by said rotatable shaft, means carried by said first die element for normally though releasably holding said indexing wheel in one of a plurality of distinct positions, means carried by said second die element for rotating said indexing wheel in response to relative movement of said pair of die elements toward said first generally open position thereof to position successive ones of said embossing stamps into said cooperative relationship with the other of said first and second embossing means, and said indexing wheel rotating means is positioned in spanning relationship to a plane generally common to said first and second cooperative embossing means in said second generally closed position.

4,459,911

RAIL DESIGNED FOR USE IN THE CONSTRUCTION OF A STENCIL FRAME

Sylve J. D. Ericsson, Tolleus väs 8, 14700 Tumba, Sweden

Continuation of Ser. No. 207,642, Nov. 17, 1980, abandoned.
This application Jan. 25, 1983, Ser. No. 460,920
Int. Cl.³ B05C *17/08*
U.S. Cl. 101—127.1 **10 Claims**



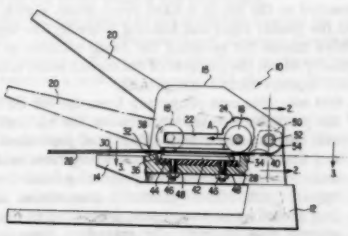
1. A rail for forming a frame to which a stencil is to be secured in position, said frame complete with the stencil secured in position being in a screen printing machine, said rail comprising a constant hollow-section profile defined by four walls, at least one of the walls of the profile being formed with a hollow projection generally centrally located thereon, said projection including two substantially parallel surfaces arranged on corresponding projection walls which extend generally perpendicular to the at least one wall, exterior sides of said surfaces facing in opposite directions from each other, said surfaces being arranged to cooperate with a holding device for the frame, ends of said projection walls remote from the at least one wall being interconnected by an additional projection wall which is substantially perpendicular to the projection walls.

4,459,912

PRINTING PRESSURE COMPENSATING MEANS IN PUMP HANDLE IMPRINTERS

William P. Barbour, Columbia, Md., assignor to DBS, Inc., Randolph, Mass.

Filed Jul. 28, 1982, Ser. No. 402,431
Int. Cl.³ B41F *3/04*
U.S. Cl. 101—269 **8 Claims**



1. A data recorder for imprinting forms by means of printing

devices in which forms and printing devices of various thicknesses may be accepted, comprising:

a bed;

an anvil on the bed for supporting a form set in overlying relationship with a printing device;

a print head supporting a roller platen for movement across the bed to perform a printing stroke;

pivot means on the bed for mounting the print head for pivotal movement between an open position spaced from the bed and a closed printing position against the bed;

means for moving the roller platen through a printing stroke in printing pressure engagement with the form set and the printing device;

first resilient means for biasing the anvil towards the form set and compressible by the anvil in response to the printing pressure; and

resilient bushing means compressible by the pivot means for biasing the roller platen in a direction away from the anvil in response to the printing pressure,

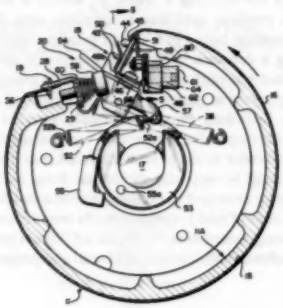
whereby the first resilient means and the resilient bushing means provide for automatic adjustment of the anvil and the roller platen pressure respectively, to compensate for the combined variations in form set and printing device thicknesses without increasing the printing pressure.

4,459,913

ADJUSTMENT STRUCTURE FOR MASTER HOLDER

Matthew F. Kowalik, Wheeling, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed Aug. 17, 1982, Ser. No. 408,765
Int. Cl.³ B41F *1/28*
U.S. Cl. 101—415.1 **1 Claim**



1. In a duplicating machine, a carrier having a frame and a support surface overlaid by a master sheet, the carrier being cyclically operable to move the support surface and master sheet along a predetermined travel path in a predetermined direction for transferring images from the master sheet to a copy sheet, the carrier having a holding assembly for retaining an end of the master sheet, a bar mounted on the carrier frame, and a beam having opposite end portions and a central portion connected to the bar at a fixed pivot point, which beam supports the master sheet end holding assembly the improvement in drive means for pivoting the beam relative to the bar to angularly adjust the position of the master sheet relative to the carrier support surface comprising:

a first rotatable cam projecting from the bar on one side of the pivotable connection between the bar and the beam, said first cam including a first post journalled in the bar and first boss eccentrically extending from said first post, and a second rotatable cam projecting from the bar on the opposite side of said pivotable connection, said second cam including a second post journalled in the bar and a second boss eccentrically extending from said second post,

a first cam follower on one end portion of the beam for operatively engaging said first cam and a second cam follower on the opposite end portion of the beam for operatively engaing said second cam, said first cam follower being maintained in continuous engagement with said first cam and said second cam follower being maintained in continuous engagement with said second cam, and

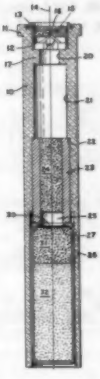
an adjustor connected to said first and second cams and having a knob mounted on the carrier outboard of the master sheet travel path said adjustor including a transversely extending first link integral with said first post and a transversely extending second link integral with said second post and a third link connecting said respective first and second links for translating linear movement of said knob into rotational movement of said cams whereby the beam opposite end portions are driven in the same rotational direction.

4,459,914

IMPACT-DETONATED TIME DELAY FUSE

Anthony M. Caruso, 1620 Dallas Street, Aurora, Colo. 80010

Filed May 17, 1982, Ser. No. 379,239
Int. Cl.³ F42C *19/08*
U.S. Cl. 102—204 **8 Claims**



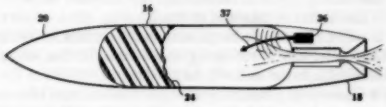
1. A fuse comprising an elongated hollow-cylindrical fuse body having a primer bore penetrating said body formed at one end thereof, a deformable ring circumscribing said primer bore for crimping over said bore, a flame passage formed in said fuse body, an expansion chamber formed in said fuse body in gaseous communication with said primer bore through said flame passage, an annular recess formed in said fuse body to terminate said expansion chamber and to provide a stop, a delay charge housing having one longitudinal end bearing against said stop, a detonating charge cannister in direct abutting engagement with another longitudinal end of said delay charge housing, said cannister having an aperture formed in longitudinal alignment with said delay charge housing and in gaseous communications therewith, an initiating charge adjacent to said cannister aperture, a detonating charge also in said cannister for activation by said initiating charge, and a deformable end of said fuse body for crimping over said detonating charge cannister in order to retain said cannister and said delay charge housing within said fuse body.

4,459,915

COMBINED ROCKET MOTOR WARHEAD

Robert A. Lynch, San Diego, Calif., assignor to General Dynamics Corporation/Convair Div., San Diego, Calif.

Filed Oct. 18, 1982, Ser. No. 434,775
Int. Cl.³ F42B 15/24
U.S. Cl. 102—374 6 Claims



3. The method of producing a plurality of elongated strip-like fragments from a solid propellant rocket casing which comprises the steps of:

providing an elongated solid propellant motor casing containing propellant with a rocket nozzle at one end;

forming a plurality of parallel longitudinal scores along said casing;

igniting said rocket propellant to cause rocket motion along a selected path;

causing said casing to break along said scores at a selected time prior to propellant exhaustion by creating a momentary overpressure within said casing by exploding a pyrotechnic device within said casing, a significant portion of said overpressure resulting from the pressure of said burning propellant within said casing; and

allowing the pressure within the casing to separate the resulting strip-like fragments;

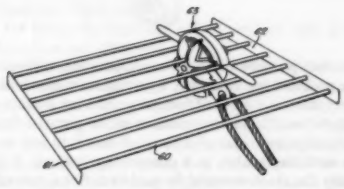
whereby targets along the rocket path in advance of the point of fragment separation are impacted by said fragments.

4,459,916

LOAD-TRANSFER SYSTEM

Alan W. Tupper, The Weavers House, Castle Combe, Wiltshire, SN14 7HX, England

Filed Mar. 23, 1982, Ser. No. 360,985
Claims priority, application United Kingdom, Apr. 16, 1981, 8112106
Int. Cl.³ F01B 25/22; B61B 12/02
U.S. Cl. 104—106 4 Claims



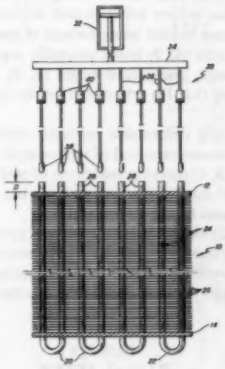
1. A system comprising a track defined by a series of rigid or semi-rigid members supported solely or principally at a pair of opposite edges of the track to extend across the track at spaced locations along the track and a load-transfer device for engagement with and movement along the track, the device comprising a rotatable wheel which is formed with several recesses in its periphery and the recesses being evenly spaced around the wheel with adjacent recesses being separated by a projecting part of the wheel; a guide member supported on the wheel, the guide member and said projecting parts of the wheel having cooperating relatively rotatable surfaces whereby, when the device and any one of said rigid or semi-rigid members, encounter one another, said wheel can rotate about its axis relative to the guide member with said rigid or semi-rigid member being received, guided and passed in one of the aforesaid recesses with at least one of said rigid or semi-rigid members being located with respect to the wheel by the guide member at any one time while the member is engaged with the track and moved therealong, wherein the track is provided by a generally planar member having a series of elongate slots therein which extend along the length of the track to leave a series of spaced transverse bars therebetween to act as the rigid or semi-rigid members of the track.

4,459,917

METHOD AND APPARATUS FOR PRODUCING EVEN TUBE EXTENSIONS IN A PARTIALLY ASSEMBLED HEAT EXCHANGER

John E. Michael, Smithville, and Larry D. Flatt, McMinnville, both of Tenn., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 30, 1982, Ser. No. 412,679
Int. Cl.³ F28F 9/04
U.S. Cl. 165—151 4 Claims



1. A method of providing uniform length integral flared portions in the ends of tubes of a heat exchanger for the reception of return bends, which extend equidistantly from a tube sheet of the heat exchanger through which the ends of the tubes initially extend at various distances from the tube sheet, which comprises the steps of:

(A) Simultaneously outwardly flaring the ends of a plurality of cylindrical tubes of uneven distance from the tube sheet by forcing an outwardly flared frustrum into the open end of each of the tubes toward the tube sheet;

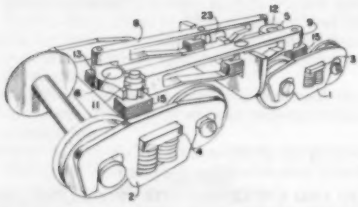
(B) stopping the movement of the frustrums toward the tube sheet at a uniformly predetermined distance therefrom, thereby forming and positioning the flared portion of each of the tubes at a uniformly preselected distance from the tube sheet; and

(C) slitting and rolling the excess material of the tubes beyond the desired flared portion by contacting and displacing the excess material beyond the desired flare portion with a roll face having slitting teeth disposed thereon, thereby simultaneously slitting and rolling the excess material of the tube backwardly toward the tube sheet while avoiding splitting of the desired flare portion being formed.

4,459,918
STEERING TRUCK

Claude Stef, Puteaux, France, assignor to Creusot-Loire, Paris, France

Filed Feb. 12, 1981, Ser. No. 233,717
Claims priority, application France, May 9, 1980, 80 10510
Int. Cl.³ B61F 3/10, 5/04, 5/20
U.S. Cl. 105—157 R 4 Claims



1. Truck assembly for railroad vehicle body, comprising

(a) two component bogies forming each truck and connected by a spanner bolster mounted on said bogies by pivots, including a forward bogie (1) arranged adjacent each end of said vehicle body, and a rear bogie (2) arranged centrally of said vehicle body;

(b) said body of said vehicle being supported centrally of said spanner bolster between said bogies;

(c) said spanner bolster being formed of spaced beams, ends of said beams (8, 9) being pivotally supported, with respect to each component bogie (1, 2), on a transverse swingle bar (12, 13) articulated on the pivot of each said bogie;

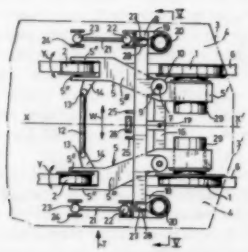
(d) transversely deformable resilient blocks (15) being arranged between each end of said swingle bars (12, 13) and a bolster (3, 4) carrying said pivot of said bogie, whereby, under load conditions, said swingle bar transmits only a reduced load to said pivot; and

(e) a pole (32) hinged to both a vertical pivot (30) solid with said body centrally of the truck assembly, and to the vertical pivot (5) of said forward composite bogie, said pole having a forward end for the attachment of a coupler.

4,459,919
RADIAL TRUCK

Emmanuel Lemaire, Binche; Michel De Ro, Nivelles, and Jacques Cuylits, Brussels, all of Belgium, assignors to S.A. Constructions Ferroviaires et Metalliques, Brussels, Belgium

Filed Mar. 2, 1982, Ser. No. 354,326
Claims priority, application Luxembourg, Mar. 5, 1981, 83193
Int. Cl.³ B61F 3/10, 3/16, 5/40, 5/52
U.S. Cl. 105—169 6 Claims



1. A supporting and guiding device for a railway vehicle, comprising:

(a) a cross bar (8) disposed transverse to a longitudinal axis (X—X') of a railway vehicle,

(b) a pair of spaced longitudinal beams (5),

(c) a pair of track engaging wheels (1, 2) individually and rotatably mounted to opposite ends of each beam,

(d) a transversely oriented rod member (12),

(e) a first pair of ball and socket joints (13) individually connecting opposite ends of the rod member between and to the beams at one end thereof,

(f) a pair of pivotable hinge means (9) carried by the cross bar individually mounting the beams to the cross bar intermediate the ends of the beams,

(g) a transversely oriented, elongate swivel bar (16),

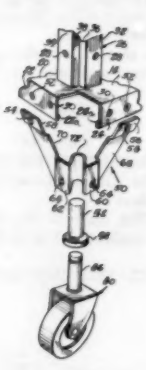
(h) a second pair of ball and socket joints (15) individually connecting opposite ends of the swivel bar to lower sides of the beams below the hinge means, and

(i) vertical pivot means (17) connecting a mid-point of the swivel bar to the cross bar, whereby the wheels may freely orient themselves to follow curvatures of the track and to pass over inequalities and unevennesses of the track.

4,459,920
DUAL PURPOSE BRACKET

Norbert L. Cwik, Northfield, Ill., assignor to Quaker Industries, Inc., Antioch, Ill.

Filed Aug. 3, 1981, Ser. No. 289,218
Int. Cl.³ A47B 47/02, 91/00; B60B 33/00
U.S. Cl. 108—107 10 Claims



1. A dual purpose bracket for cooperating with a combined corner post and leg structure, a post portion of which overlies adjacent sides of a piece of furniture and a leg portion of which extends below a lowermost surface of the piece of furniture, to join said adjacent sides of a piece of furniture and to mount a caster-receiving socket, and comprising: a single strip of substantially flat sheet material formed to define a pair of substantially symmetrical joining portions and a socket-receiving portion intermediate and continuous with said joining portions, each of said joining portions including a first surface locatable substantially abutting an inner surface of said corner post leg portion and having a through aperture for receiving fastener means for attachment to said corner post, a second surface locatable substantially abutting the plane of an inner surface of one of said adjacent sides and having a through aperture for receiving fastener means for attachment to said one adjacent side and a third surface recessed inwardly of said first and second surfaces and joining said first and second surfaces, said third surface permitting simultaneous attachment of said bracket with said adjacent sides and with said leg therebelow without interference from said sides, thereby providing a second point of securement of said corner post and leg structure to said furniture adjacent surfaces for enhanced rigidity of said leg portion for mounting said caster, and said socket-receiving

portion comprising a curved surface projecting inwardly with respect to an imaginary corner defined by said adjacent sides, the curvature thereof being similar to the curvature of at least a portion of said caster-receiving socket to receive said caster-receiving socket inwardly of said corner post.

4,459,921

METHOD AND APPARATUS FOR BURNING INERTS, PARTICULARLY FLOTATION ADDLES MIDDLINGS, CLARIFICATION PONDS AND/OR DOMESTIC REFUSE AS A FIRING MATERIAL IN A GRATE FIRING

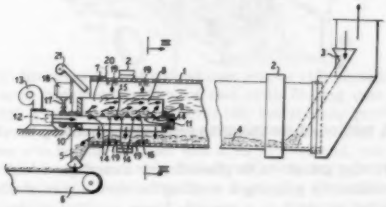
Guenther Unger, Humboldt-/Heidestrasse, D-5628 Heiligenhaus, Fed. Rep. of Germany

Filed Oct. 30, 1981, Ser. No. 316,847

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041025

Int. Cl.³ F23G *5/06*

U.S. Cl. 110—226 **12 Claims**



1. Apparatus for drying high-ash refuse coal, comprising:

a rotary firing chamber including a grate, said grate mounted, with respect to said drum, as in a fixed cantilever structure; means for rotating said firing chamber;

feeding means for feeding high-ash refuse coal onto said grate for firing;

said grate comprising movably mounted grate elements each carrying slag crushing members, each of said grate elements comprising a tube including a first passageway therethrough and each of said crushing elements comprising a second passageway in communication with said first passageway and terminating in an air jet for supporting a flow of cooling combustion air and directing the same into the high-ash refuse coal;

means for firing the high-ash refuse coal on said grate to produce heat and slag; and

means for moving said grate elements relative the slag for comminuting the slag with said crushing members.

10. Apparatus for drying high-ash refuse coal, comprising:

a rotatable drying chamber for receiving a flow of high-ash refuse coal therethrough, comprising a rotatable hollow drum and means for rotating said rotatable hollow drum;

first feed means for feeding high-ash refuse coal into said drying chamber;

discharge means for discharging the dried coal from said drying chamber;

a firing chamber including a grate comprising movably mounted grate elements;

each of said grate elements comprising a hollow tube including a passageway for supporting a flow of cooling combustion air, and a plurality of crushing elements carried on said tube, each of said crushing elements including an air jet opening in communication with said passageway;

second feed means for feeding a portion of the high-ash refuse coal being dried onto said grate from above said grate for burning to produce heat and slag, said second feed means comprising scoop elements fixed to the interior of said drum to scoop inert material from below and dump the same from above onto said grate; and

drive means connected to said grate elements for moving the same relative the slag to comminute the slag with said crushing elements.

4,459,922

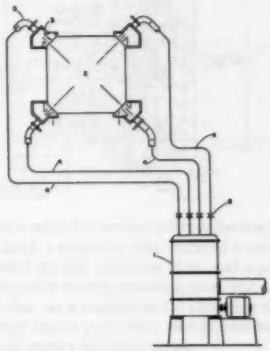
EXTERNALLY ADJUSTABLE PIPE ORIFICE ASSEMBLY

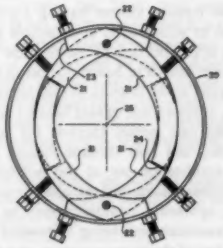
Roman Chadshay, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 24, 1983, Ser. No. 460,222

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—265 **1 Claim**





1. In a system for controlling the air-entrained coal flowing from a pulverizer to each fuel nozzle mounted within a windbox of a tangentially-fired furnace, including.

a conduit connected between the pulverizer and fuel nozzles mounted in each windbox,

a bracket mounted between two sections of the conduit,

a plurality of abrasion-resistant plate segments and each having a configuration of an arc and pivoted eccentrically from the bracket toward and away from the axis of the conduit.

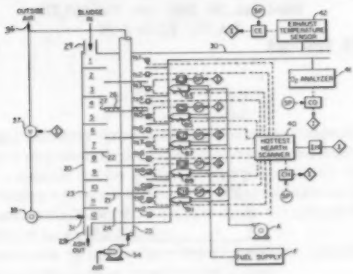
and screws operative from external the conduit and mounted in threaded engagement with the bracket and each screw bears upon the edge of a plate segment to determine its pivoting toward or away from the axis of the conduit in establishing an orifice-like pressure drop developing restrictions to air-entrained coal flowing through the conduit so as to provide a means for selective control of the flow through the conduit.

4,459,923

METHOD AND APPARATUS FOR EFFICIENTLY CONTROLLING THE INCINERATION OF COMBUSTIBLE MATERIALS IN A MULTIPLE HEARTH FURNACE SYSTEM

Frederick M. Lewis, Mountain View, Calif., assignor to Sterling Drug, Inc., New York, N.Y.

Filed Feb. 18, 1983, Ser. No. 467,606
Int. Cl.³ F23G 5/04
U.S. Cl. 110—346 28 Claims



1. In a method for controlling the operation of a multiple hearth furnace system for efficiently incinerating combustible materials, said furnace system having a plurality of superimposed hearths to which solid combustible materials are introduced at the upper portion of the furnace system and passed downward from hearth to hearth for being incinerated and the ash is discharged at the bottom of said furnace system through an ash outlet, at least some of said hearths being burner hearths having at least one burner thereon for adding heat to said burner hearths, and said furnace system having means for introducing combustion air at the bottom thereof and the unreacted combustion air and the gaseous products of combustion flowing upwardly countercurrent to the flow of solid combustible materials and being exhausted as system exhaust gas from the top of the furnace system, the improvement comprising:

scanning the temperatures of combustible material handling hearths and determining which is the hottest hearth;

controlling the temperature of the thus determined hottest hearth at a predetermined temperature set point value by regulating at least one manipulatable variable;

maintaining the oxygen content of the system exhaust gas at least as high as a predetermined set point value by regulating at least one of said manipulatable variables; and

maintaining the system exhaust gas temperature at least as high as a predetermined set point value by regulating at least one of said manipulatable variables;

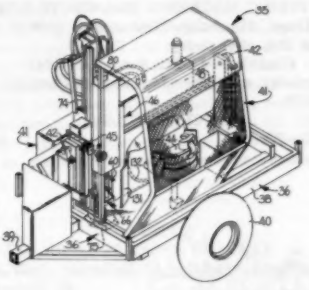
said manipulation variable being taken from among the operations of controlling the combustion air flow to the bottom of the furnace, controlling the firing rate of the burner on the burner hearth or hearths above the thus determined hottest hearth, controlling the firing rate of the burner on the burner hearth or hearths below the thus determined hottest hearth, and controlling flow of afterburner air to the system exhaust gas.

4,459,924

APPARATUS AND METHOD FOR SPOT PLANTING SEEDLINGS

Awatif E. Hassan, Raleigh; William H. Haddock, Garner, and Randolph L. Zink, Raleigh, all of N.C., assignors to North Carolina State Univ. at Raleigh, Raleigh, N.C.

Filed Jul. 12, 1982, Ser. No. 397,461
Int. Cl.³ A01C 11/02
U.S. Cl. 111—2 10 Claims



1. A method of spot planting seedlings comprising the steps of:

traversing ground to be planted with a carriage, while

intermittently gripping a seedling between a pair of dibble plates mounted on a movable frame mounted on the carriage, and

intermittently moving the dibble plates and a seedling gripped therebetween jointly vertically downwardly relative to the frame for propelling the dibble plates and seedling into a spot of ground, then

lifting one dibble plate vertically relative to the other for separating the dibble plates and releasing the seedling in the spot of ground, while

reducing to zero the relative fore and aft velocity between the engaged spot of ground and the dibble plates and frame by permitting free movement of the dibble plates and frame aftwardly of a horizontal longitudinal axis of said carriage, then

compressing soil about the released seedling, then lifting the separated dibble plates from the spot of ground vertically upwardly relative to the frame, and then

engaging an elongate flexible drive member with the frame and driving the frame and dibble plates forwardly of the horizontal longitudinal axis in preparation for a next subsequent cycle of planting, all while

continuing to traverse ground to be planted at a predetermined, uninterrupted speed.

4,459,925

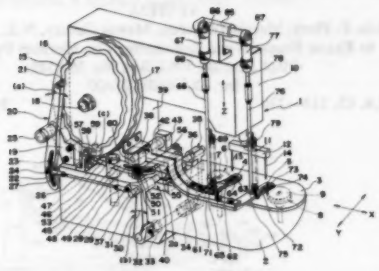
CYCLE SEWING MACHINE

Nobuji Miyachi, and Ken'iti Miyake, both of Kyoto, Japan, assignors to Miyachi Sewing Machine Co., Ltd., Kyoto, Japan

Filed Sep. 7, 1982, Ser. No. 415,882
Claims priority, application Japan, Sep. 12, 1981, 56-144200; Sep. 12, 1981, 56-144201; Sep. 18, 1981, 56-139442[U]
Int. Cl.³ D05B 3/04, 3/12, 65/02, 27/00
U.S. Cl. 112—70 6 Claims

1. A cycle sewing machine equipped with a cloth feeding mechanism which comprises a cloth feeding cam (15) driven for rotation at reduced speed in association with rotation of an arm shaft of the cycle sewing machine, said cloth feeding cam (15) being formed, at one side face and an outer peripheral surface thereof, with first and second cam grooves (16) and (17), a feed table (40) horizontally movable in lateral and longitudinal direction of said cycle sewing machine and fixed to a

slide shaft (37) so disposed between said cloth feeding cam (15) and a sewing needle of the cycle sewing machine as to be slidable in said lateral direction, said feed table (40) being arranged to be moved in said longitudinal direction by said first cam groove (16) formed at the one side face of the cloth feeding cam (15) through a first oscillating lever (20) vertically provided on the cycle sewing machine, and to be moved in said



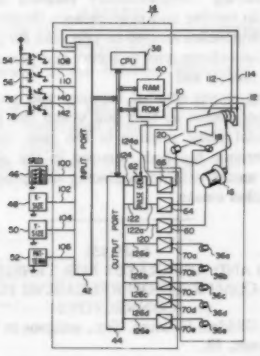
lateral directions by said second cam groove (17) provided in the outer peripheral surface of said cloth feeding cam (15) through a second oscillating lever (45) horizontally provided on the cycle sewing machine and a link member (55), and a presser arm having a presser foot at its forward end, and supported, at its rear end, by said feed table (40) through a horizontal shaft (60), with said presser foot being directed under said sewing needle.

4,459,926

INDUSTRIAL AUTOMATIC PATTERN STITCHING MACHINE

Kohichi Ohniwa, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1982, Ser. No. 367,515
Claims priority, application Japan, Apr. 10, 1981, 56-53930
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.12 **6 Claims**



1. A pattern stitching machine comprising:

a memory for storing predetermined stitching patterns;

a sewing machine head for stitching a selected one of said stitching patterns on a cloth, said sewing machine head having a cloth holder and drive means for moving said cloth holder in response to driving pulses; and

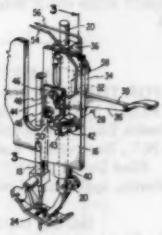
means for determining a number of driving pulses to be supplied to said drive means in response to data from said memory representative of said selected stitching pattern, said control means including means for limiting said pulses applied to said drive means if a speed of said cloth holder would exceed a predetermined limit speed for said data from said selected stitching pattern.

4,459,927

ARRANGEMENT FOR SIGNALING PRESSER BAR POSITION

Marvin Kurland, East Brunswick; Ferdinand P. Oliva, Cranford, and Terry L. Wilson, Denville, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Dec. 12, 1983, Ser. No. 560,292
Int. Cl.³ D05B *29/00*
U.S. Cl. 112—237 **6 Claims**



1. In combination with the sewing machine having a bracket arm including a head, a mounting plate secured in said head, a presser bar mounted on said mounting plate, and a presser bar lifter pivotally mounted on said mounting plate and adapted to raise said presser bar, an arrangement for changing the condition of an electrical circuit path when said presser bar lifter is pivoted to lift said presser bar comprising:

a first switch contact member supported on said plate;

a second switch contact member mounted for pivotal movement with said presser bar lifter, said second switch contact member being contoured so that it is spaced from said first switch contact member when said presser bar lifter is in one of its lowered or raised positions and it contacts said first switch contact member when said presser bar lifter is pivoted to its other position;

first connection means for electrically connecting said first switch contact member serially in a first leg of said electrical circuit path; and

second connection means for electrically connecting said second switch contact member serially in a second leg of said electrical circuit path.

4,459,928

HEMMING BY ZIGZAG SEWING MACHINE

Yasukata Eguchi, Kunitachi, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jun. 29, 1982, Ser. No. 393,360
Claims priority, application Japan, Jul. 7, 1981, 56-105039
Int. Cl.³ D05B *1/20*
U.S. Cl. 112—268.1 **5 Claims**

1. A method of hemming a fabric by means of a zigzag sewing machine which forms locking stitches with an upper thread and a lower thread and has a machine head, the method comprising the steps of providing a presser foot attached to the machine head and having a needle dropping hole; providing a fabric guide member on said presser foot for guiding the hem of the fabric to be sewn during the hemming; providing a thread guide member connected to the presser foot and disposed outside of the fabric guide member and in parallel to a fabric feed direction; and forming a plurality of subsequent series stitches of a predetermined cycle; wherein the forming step of an individual series stitch includes producing at least two stitches on the fabric to be sewn, producing at least one

stitch at the fabric hem and producing at least one stitch outside of said thread guide member, a stitch at the fabric hem of

each subsequent series stitch being located within a previous series stitch.

4,459,929

TANKS FOR THE STORAGE AND TRANSPORT OF FLUID MEDIA UNDER PRESSURE

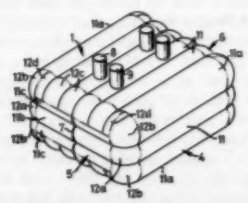
Roger C. Ffooks, London, England, assignor to Ocean Phoenix Holdings N.V., Netherlands Antilles

Filed Dec. 8, 1982, Ser. No. 447,962

Claims priority, application United Kingdom, Dec. 16, 1981, 8137977

Int. Cl.³ B63B *25/08*

U.S. Cl. 114—74 A **5 Claims**



1. An internal pressure sustainable tank for the storage and transport of fluid media under pressure comprising, a bottom wall, a top wall, four side walls and an internal framework of plates; each of said bottom, top and two opposed side walls consisting of at least two longitudinally extending parallel lobes, each lobe being of part-cylindrical form ith the same radius of curvature and being convex outwardly of the tank with each of its two inwardly-directed longitudinal edges joined to both a longitudinal edge of a lobe alongside and an edge of a plate of said internal framework; the latter consisting of two orthogonally intersecting series of parallel plates each plate in one series extending from the joint between two lobes of one of said opposed side walls to the respective opposite joint of its opposite side wall, each plate in the other series extending from the joint between two lobes of the bottom wall to the respective opposite joint between two lobes of the top wall, and the plates of at least one of said series extending longitudinally and being also united to oppositely arranged joints of wall components of the other two opposed side walls so that these latter walls are tied to one another longitudinally, the joints at the inter-sections of the two series of plates, the bottom wall lobes and adjacent plates, the top wall lobes and adjacent plates, and the side wall lobes and adjacent plates being formed by elongate insert elements with a number of arms equal to the number of plates they are to connect, the arms being angled to align with the line of said plates, wherein the improvement comprises each one of said other opposed walls consisting of at least two part-lobes of the same radius of curvature, but of appreciably smaller arc than the lobes of said opposed side, top and bottom walls, which part-lobes present straight edges to which the common straight end edges of a series of two-way corner transition and part-transition pieces are joined, these latter pieces having the same radius of curvature as the lobes at their other end edges and being joined at said other ends to respective lobes of an appropriate one of said opposed side walls, and in that the end of each part-lobe has a respective part-transition piece joined thereto to present a curved edge to which a part spherical three-way corner can be joined to close-off the end wall.

4,459,930

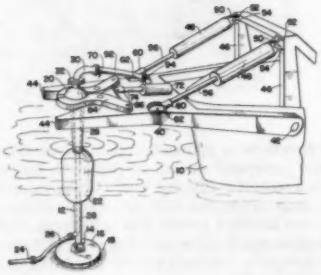
RISER AND DETACHABLY COUPLED YOKE MOORING SYSTEM

John F. Flory, Morris Township, Morris County, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 28, 1982, Ser. No. 393,105

Int. Cl.³ B63B *21/00*

U.S. Cl. 114—230 **31 Claims**



1. A mooring system for a vessel floating in a body of water comprising:

(a) single riser means attached to the floor of said body of water and extending above the surface of said body of water in a substantially vertical position;

(b) a protuberance situated upon said riser means near the upper end thereof;

(c) a yoke secured to said vessel for pivotal movement in a vertical plane relative to said vessel;

(d) said yoke including an opposed pair of pivoted clamp arms having complementary recesses defining socket means to receive said protuberance therein;

(e) operating means located on said yoke for pivoting at least one of said clamp arms to secure said protuberance in said socket means; and

(f) bearing means situated between said protuberance and said riser means so that said vessel can pivot 360° in a horizontal plane relative to the riser means after said protuberance has been secured in the recesses of said socket means without displacing said protuberance from said socket means.

4,459,931

METHOD AND APPARATUS FOR TENSION SETTING AND COMPRESSION RELEASING TUBULAR CONNECTORS

Gregory L. Glidden, Houston, Tex., assignor to FMC Corporation, Chicago, Ill.

Division of Ser. No. 071,811, Sep. 4, 1979, Pat. No. 4,347,012. This application Aug. 17, 1981, Ser. No. 293,812

Int. Cl.³ B63B *21/26*

U.S. Cl. 114—230 **1 Claim**

1. A system for releasably connecting a marine vessel to an anchor base on the sea floor and for releasing said vessel from said base by remote control from a surface location, said system comprising:

an anchor base;

means for securing said anchor base to the sea floor;

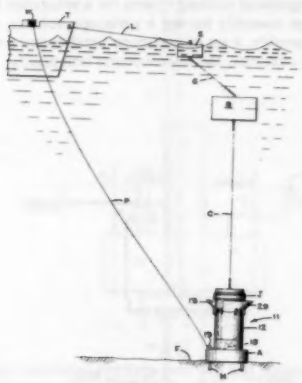
a connector having an inner element and an outer element,

said outer element having a passage to receive said inner element;

means for securing said outer element to said anchor base with said passage in a generally vertical direction;

means for connecting said inner element to said marine vessel;

means for remotely controlling the locking of said inner element to said outer element when said inner element is lowered into said passage in said outer element and upward tension is applied to said inner element;



a floatable buoy and a chain connected between said buoy and said inner element, said chain having a length which holds said buoy below the surface of the water to provide an upward tension on said inner element in spite of wave action to retain said inner and outer elements in a locked position; and

means for remotely controlling the releasing of said inner element from said outer element by remote control from said surface location by removing the upward tension on said inner element and allowing gravity to move said inner element downward in said passage in said outer element.

4,459,932

ALL-TERRAIN AND AMPHIBIOUS AUTOMOTIVE VEHICLE

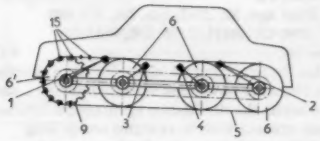
Georges Hildebrand, 2, rue Heckler, Strasbourg (Bas-Rhin), France

Filed Mar. 1, 1982, Ser. No. 353,030

Claims priority, application France, Feb. 27, 1981, 81 04379; Jun. 29, 1981, 81 13058

Int. Cl.³ B62D *55/04*; B63B *35/00*

U.S. Cl. 114—270 **10 Claims**



1. In an all-terrain and amphibious vehicle having an elongated chassis and at least two axles of which at least one is power driven and has power-driven wheels, and other wheels and an endless track trained about said power-driven wheels and said other wheels on each side of the vehicle, and inflatable members secured to the chassis along its longitudinal edges and at the front and the rear of the chassis; the improvement in which said vehicle is provided by conversion of a standard automotive vehicle, said vehicle having additional axles on which are mounted said other wheels which can be raised and are removable in case of non-use, and a further inflatable element directly beneath the chassis adapted to serve as a float for the vehicle, means interconnecting said power-driven wheels with said other wheels for conjoint rotation, and means to brake at least one of said power-driven wheels to steer the vehicle by driving.

4,459,933

MARINE TETHER ANCHORING DEVICE

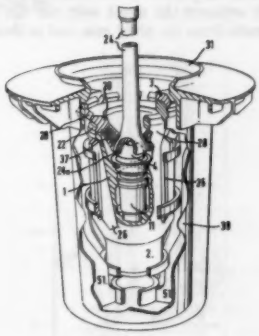
Clive J. Burchett, Woodlands, England, assignor to Vickers Limited, London, England

Filed Oct. 30, 1984, Ser. No. 315,603

Claims priority, application United Kingdom, Nov. 6, 1980, 8035742

Int. Cl.³ F16B *1/04*; F16D *3/00*; B63B *21/26*

U.S. Cl. 114—297 **10 Claims**



1. A marine tether anchoring device comprising in combination:

(a) an anchor body;

(b) a segmented spring collet surrounding said body, movable axially relative thereto and having an expandible upper end;

(c) wedging means attached to said anchor body, said wedging means being arranged to expand the upper end of said collet as said anchor body moves downwardly relative to said collet and having means defining a surface with which the segments of said collet latch to define the expanded state of said collet;

(d) an anchoring chamber into which said anchor body and collet may be inserted and including a wall that the upper end of the collet lockingly engages in its expanded state;

(e) a tether line having a lower end connected to said wedging means so that said lower end cannot escape from said anchoring chamber when said collet is wedged in its expanded state; and

(f) controllable actuator means in said body operable to move said collet downwardly relative to said body so that the upper end of said collet is unlatched from said surface on said wedging means and can retract away from the wall of the anchoring chamber to permit withdrawal of the anchor body and collet as the tether line is pulled upwards.

4,459,934

ANCHOR

George W. Long, 122 S. Golden Mall, Burbank, Calif. 91502

Filed Mar. 22, 1982, Ser. No. 360,695

Int. Cl.³ B63B *21/36*

U.S. Cl. 114—304 **24 Claims**

1. A rotatable anchor having a shank and a body in the form of a rigid unit carried on the shank for rotating about an axis through the shank, the rigid unit comprising:

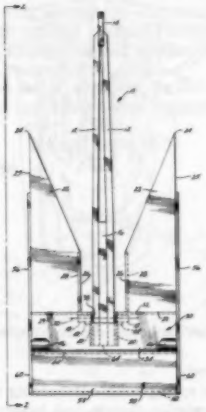
a pair of flukes lying in a common plane and formed as flat plates having opposite faces and pointed tips at one end of the rigid unit;

elongated elevating members extending across the width of the flukes and rigidly secured to lower portions of the flukes so that the elevating members extend downwardly away from the tips of the flukes and project outwardly beyond the opposite faces of the flukes;

a counterweight;

means rigidly securing the counterweight to a lower portion of the elevating members so the elevating members each form an elongated ramp extending outwardly and downwardly away from the flukes toward the counterweight, with each elevating ramp extending across the width of the flukes;

means mounting the rigid unit for rotation about a pivot axis through a lower portion of the shank so the flukes extend upwardly adjacent the shank with the tips of the flukes being remote from the pivot axis; and so that each elevating ramp extends outwardly and downwardly away from the pivot axis toward the counterweight; the counterweight being of sufficient weight and being spaced sufficiently far from the pivot axis that the turning moment produced by the counterweight about the axis is greater than the turning moment produced about the same axis by the flukes that extend above the axis; and



spaced apart claws projecting outwardly beyond each elevating ramp and projecting toward the tips of the flukes for frictional contact with the bottom of a body of water so the flukes will pivot about the axis toward the bottom and so that the elevating ramp can rest on the bottom spaced from the pivot axis for holding the tips of the flukes in the bottom with the counterweight elevated well above the bottom so that continued pull on a line secured to the shank together with the greater turning moment of the counterweight about the axis causes the counterweight to force the tips of the flukes into the bottom to bury the anchor in the bottom.

4,459,935

PHANTON COMPUTER GATING SYSTEM

Fred A. Dexter, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 29, 1982, Ser. No. 344,236
Int. Cl.³ B63G *8/38*
U.S. Cl. 114—340 **16 Claims**

1. A switching system comprising:

a first oscillator;

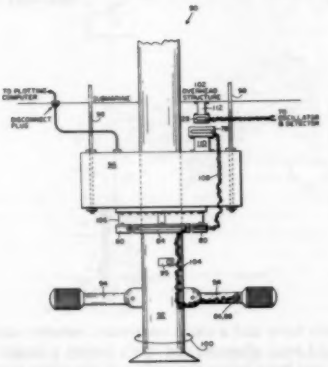
a second oscillator including a frequency comparator operably coupled to said first oscillator;

a relay having a winding operably coupled to said second oscillator and having a set of contacts;

first means operably coupled to said first oscillator for varying the output frequency of said first oscillator;

said frequency comparator being operable for providing an output signal to said relay when the output frequency of said first oscillator is substantially the same as the output frequency of said second oscillator.

16. In a navigational plotting system for a submarine including a periscope assembly having a periscope column, a periscope hoist assembly, a set of periscope handles and a submarine overhead structure, the improvement comprising:



a switch secured to said set of periscope handles;

a first coil connected to said switch and secured to said periscope column so as to be rotatable therewith;

a second coil magnetically coupled to said first coil and secured to said periscope hoist assembly;

a third coil connected to said second coil and secured to said hoist assembly;

a fourth coil secured to said overhead structure; and

means connected to said fourth coil and having a first condition and a second condition and for responding to closure of said switch to change from said first condition to said second condition.

4,459,936

APPARATUS FOR INDICATING WHETHER THE INTERIOR OF A CONTAINER HAS BEEN STERILIZED DURING A STERILIZATION PROCESS

David A. Karle, McKean, Pa., assignor to American Sterilizer Company, Erie, Pa.

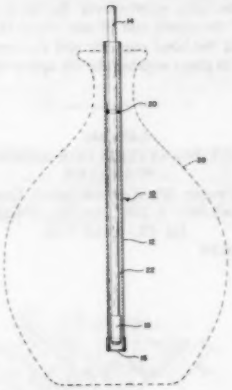
Filed Apr. 30, 1982, Ser. No. 373,650
Int. Cl.³ A61L *2/06*; G01N *33/00*
U.S. Cl. 116—207 **4 Claims**

1. Apparatus for providing an indication as to whether the contents of a container have been sterilized during a sterilization process wherein the sterilization agent enters the container and comes into contact with its contents comprising:

a first member, said first member having means for coacting with the sterilization agent to indicate the sterility of the contents of the container;

a second member, said second member adapted to extend into the interior of the container to be sterilized, and adapted to receive and releasably engage said first member in a sealed relationship so that said coacting means of said first member can be positioned within the interior of the container to be sterilized during the sterilization process and so that said first member can be placed in and withdrawn from said second member without exposing the operator to the contents of the container or the con-

tents of the container to the surrounding environment, at least a portion of said second member being selectively permeable to the sterilization agent so that the sterilization agent can come in contact with said coacting means of said first member without said coacting means being contaminated by the container contents; and



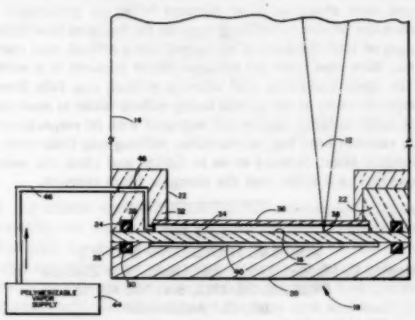
means positioned between said first and second members for effecting said sealed relationship and for preventing the sterilization agent from coming in contact with said coacting means of said first member unless the sterilization agent has first permeated said second member.

4,459,937

HIGH RATE RESIST POLYMERIZATION APPARATUS

Addison B. Jones, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 257,822, Apr. 27, 1981, Pat. No. 4,357,364.
This application Jul. 12, 1982, Ser. No. 397,646
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—50.1 **3 Claims**



1. High energy particle polymerization resist generation apparatus, comprising in combination:

a high energy particle source;

a vacuum chamber in proximity to said source for receiving particles from the source;

means for supporting a substrate within the chamber having a surface on which a resist is to be generated in high energy particle exposed relation;

means defining a closed volume chamber adjacent said surface between the supported substrate and said source;

the surface of the closed volume chamber facing the source adapted to be impacted by said particles comprising a high energy particle beam transparent, polymerizable vapor impermeable membrane;

said closed chamber containing polymerizable molecular species vapor therein;

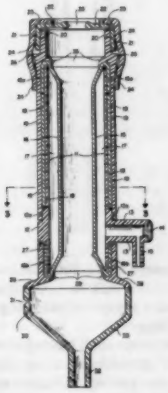
means for maintaining polymerizable molecular species vapor in said closed chamber at a predetermined pressure whereby high energy exposure of said species vapor via said surface of the chamber establishes polymerization in situ on said substrate surface as a resist.

4,459,938

TEAT CUP ASSEMBLY

Daniel O. Noorlander, 508 W. 630 South, Orem, Utah 84057

Filed Jun. 23, 1982, Ser. No. 391,168
Int. Cl.³ A01J *5/04*
U.S. Cl. 119—14.49 **16 Claims**



1. A teat cup assembly for an automatic milking machine which employs a milk line operating at substantially constant vacuum and a source of pulsating vacuum, said teat cup assembly comprising:

a rigid, tubular shell molded from a plastic material, said shell having first and second open ends, said shell further having a raised band which is affixed to the shell and encircles the outer circumference of said shell, said raised band being spaced along the longitudinal length of said shell from at least the fist open end of said shell, said shell further having a port therein through said raised band, with said port being adapted to be connected to a source of pulsating vacuum;

an elongate, tubular inflation member made of a resilient, flexible, elastomeric material, said inflation being adapted to be received longitudinally within said shell;

means for interconnecting opposite end portions of said tubular inflation member to respective ends of said shell, whereby an enclosed, pulsating vacuum chamber is defined between said inflation and said shell;

a sheet of metal formed to wrap around and conform closely to the outer surface of said shell, said metal sheet being positioned between said raised band and said first open end of said shell;

an elongate sleeve member adapted to slide over the shell and the sheet of metal in telescopic manner, with the leading end of said sleeve being adapted to make a tight, compression fit over the periphery of at least the end portion of said raised band;

means for sealing the other end portion of said sleeve member to said shell;

teat entrance means associated with one of the opposite end

portions of said inflation for receiving a teat of an animal to be milked within said inflation; and

means associated with the other end portion of said inflation for connecting a vacuum milk line in flow communication with said inflation.

4,459,939

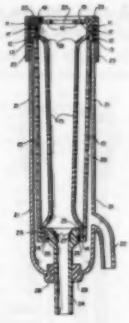
DISPOSABLE INNER SLEEVE FOR INFLATION ASSEMBLY

Daniel O. Noorlander, 508 West 630 South, Orem, Utah 84057

Filed Jul. 22, 1982, Ser. No. 400,739

Int. Cl.³ A01J *5/04*

U.S. Cl. 119—14.49 **7 Claims**



1. A teat cup assembly for automatic milking machines of the type which employs a milk line operating at substantially constant vacuum and a source of pulsating vacuum, said teat cup assembly comprising:

a rigid, tubular, outer shell having a substantially open upper end, a port positioned along the longitudinal length thereof and an opening at the lower end thereof, said port being adapted to be connected to the source of pulsating vacuum;

a rigid, elongate, tubular inner shell adapted to fit longitudinally within said outer shell from the open upper end of said outer shell, with an annular space being formed between the outer surface of said inner shell and the inner surface of said outer shell, said inner shell having at least one aperture therein along the longitudinal length thereof;

an annular shoulder around the upper end of said inner shell, said shoulder being adapted to abut the open upper end of said outer shell when the inner shell is fit longitudinally within said outer shell;

a cylindrical band securely attached to the upper end of said inner shell adjacent to said annular shoulder, with said cylindrical band extending substantially coaxially outwardly from the open end of said outer shell;

an elongate tubular inflation member made of a resilient flexible elastomeric material, said inflation member being adapted to be received longitudinally within said tubular shell;

a head member molded integrally to the upper end of said inflation member, said head member comprising a diaphragm positioned across the otherwise open upper end of said inflation member and a substantially cylindrical side section which extends from the perimeter of said diaphragm so as to be spaced from the upper end of said inflation member, whereby said cylindrical side section is adapted to fit over the raised cylindrical band at the upper end of said inner shell when said inflation member is positioned with said inner shell, said diaphragm having a central opening therein adapted to receive the teat of an animal to be milked;

means for sealing the lower end of said inflation to said inner shell so as to form a chamber between said inflation and said inner shell;

means associated with the lower end of said inflation and extending from the open, lower end of said outer shell for connecting a milk line in fluid flow communication with said inflation;

means for sealing the open, lower end of said outer shell to said means associated with the lower end of said inflation; and

a substantially cylindrical cap member which is adapted to slide substantially tightly over the head member and a portion of the upper end of said outer shell so as to securely hold the head member and the upper end of said inner shell in place adjacent to the upper end of said outer shell.

4,459,940

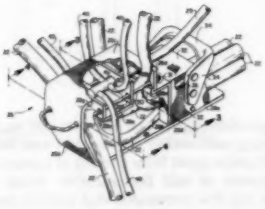
MILK COLLECTING SYSTEM FOR AUTOMATIC MILK APPARATUS

Daniel O. Noorlander, 508 West 630 South, Orem, Utah 84057

Filed May 3, 1982, Ser. No. 374,518

Int. Cl.³ A01J *7/00*

U.S. Cl. 119—14.54 **14 Claims**



1. A collector member for collecting or bringing together in closely spaced arrangement the vacuum hose lines attached to individual milking cups of an automatic milking machine, said collector member comprising a body member having at least one passageway therein through which all the individual, collected vacuum hose lines pass in closely spaced side-by-side relationship; at least one elongate blunt element positioned adjacent to the vacuum hose lines as they emerge from said collector member on their respective ways to said milking cups, said elongate blunt element being so positioned that when the respective milking cups on the vacuum hose lines are engaged with the teats of an animal being milked, said vacuum hose lines pass over the elongate blunt element in a substantially open condition, and when a milking cup falls from its respective teat of the animal being milked while at least one of the other milking cups is still engaged with its respective teat, the vacuum hose line on the fallen milking cup folds over said elongate blunt element so as to flatten and close the vacuum hose line as it folds over the elongate blunt element.

4,459,941

ANIMAL HANDLING DEVICE

Gregory C. Moffatt, Gorge Rd., Otaki, New Zealand

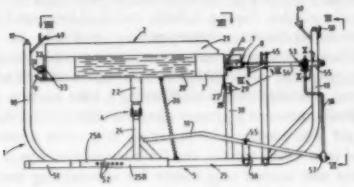
Filed Jul. 20, 1982, Ser. No. 400,033

Int. Cl.³ A61D *3/00*

U.S. Cl. 119—103 **11 Claims**

1. An animal handling device for shearing of sheep comprising a support frame and a sub-frame coupled thereto enabling tilting and rotational movement therebetween, said sub-frame including a pair of elongate rollers connectible with a drive means to be rotated in a common direction and to rotate a sheep tethered in position thereon; said sub-frame being adapted by its mounting on said support frame to be rotated and tilted relative thereto to receive a sheep on said rollers when the weight of said sheep assists in the return of said sub-frame to a substantially horizontal position; and sub-frame can then be rotated relative to said support frame so as to again axially align with the support frame for a shearing operation to

commence; further rotation and tilting of said sub-frame relative to said support frame at the end of a shearing operation being effected for the subsequent release of the now shorn



sheep, and wherein said drive means is connectible to said rollers to drive same through a drive coupling means which can be disconnected to enable said sub-frame to be moved relatively to said support frame.

4,459,942

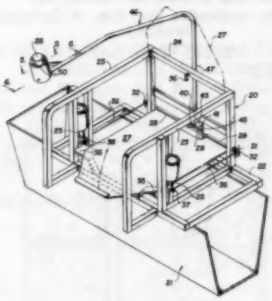
ANIMAL SPRAYING APPARATUS

Grover L. Cauthron, Rte. 1, Box 29, Fairview, Mo. 64842

Filed Mar. 7, 1983, Ser. No. 473,053

Int. Cl.³ A01K *29/00*

U.S. Cl. 119—159 **10 Claims**



1. An animal spraying apparatus for mounting bodily and removably on top of a feed or drinking trough for animals, comprising a supporting body portion resting on top of the trough securely a pair of opposite side lower spray units and one elevated center spray unit on said supporting body portion and positioned thereon to spray the face area and back of a feeding animal, a movable animal-operated member connected to the supporting body portion and extending across the trough and engaged and moved upwardly by a feeding animal so as to gain access to the trough and to initiate operation of said spray units and terminating such operation when moved in a downward direction responsive to the cessation of feeding by the animal, a primary spray unit control element connected with the animal-operated member and being movable therewith, and driving connecting means between the spray units and the primary control element whereby the spray units are turned on and turned off in unison by the movements in opposite directions of the animal-operated member.

4,459,943

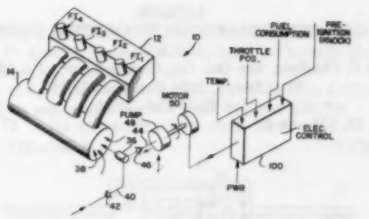
FLUID INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE RESPONSIVE TO FUEL FLOW

Toronta P. Goodman, Summit Point, W. Va., assignor to Goodman System Company, Inc., Armonk, N.Y.

Filed Dec. 22, 1981, Ser. No. 333,449

Int. Cl.³ F02M *25/04*

U.S. Cl. 123—25 J **13 Claims**



1. A system for injecting a fluid into the intake air of an internal combustion engine of the type having both means for providing intake air and means for providing fuel from a fuel supply means to a combustion chamber, said system comprising:

first means for injecting a fluid into said intake air in response to a flow of supply air provided to said first means;

an air pump connected to a controllable electric drive means, said air pump providing a flow of supply air to said first means in response to said controlled electric drive means to cause said first means to inject the fluid into said intake air; and

third means connected to said drive means for effecting control thereover to vary the flow of supply air to said first means, said third means connected to the fuel supply means and operative to control said drive means to provide a flow of supply air to said first means that is responsive to the fuel flow provided by the fuel supply means.

4,459,944

WATER-COOLED INTERNAL COMBUSTION ENGINE WITH A SOUND-ABSORBING COVER

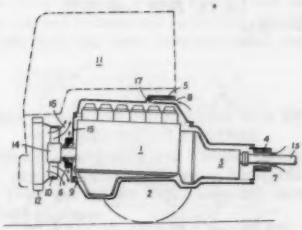
Karl Kirchweger; Franz Knopf, and Gerhard Thien, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Jul. 12, 1982, Ser. No. 397,204

Claims priority, application Austria, Jul. 15, 1981, 3133/81

Int. Cl.³ F01P *1/02*; F02B *77/00*

U.S. Cl. 123—41.66 **10 Claims**



1. A water-cooled internal combustion engine comprising a sound-absorbing cover and a radiator/fan assembly located outside of said cover, said fan drawing in cooling air through said radiator during operation of said internal combustion engine, and said cover being provided with at least one sound-insulating air inlet and outlet opening each for the supply of cooling air for ventilating the space enclosed by said cover,

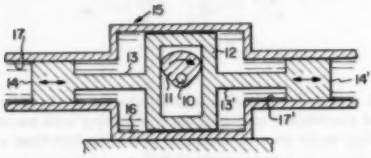
wherein a suction device is provided for each of said air outlet openings for creating a partial vacuum inside said cover and for drawing off the cooling air sucked in through said air inlet openings and heated inside said cover via said air outlet openings, and wherein said suction device is provided with a suction port located in the low pressure area of said radiator/fan assembly, said port being connected to said air outlet opening in said cover.

4,459,945

CAM CONTROLLED RECIPROCATING PISTON DEVICE

Glen F. Chatfield, Sky Oak Dr., Bradfordwoods, Pa. 15015

Filed Dec. 7, 1981, Ser. No. 328,233
Int. Cl.³ F02B 75/24
U.S. Cl. 123—56 C **17 Claims**



1. In an internal combustion engine the improvement comprising

at least one cylinder and integral cam case,

a camshaft,

camshaft bearings for journaling the shaft in the cam case,

a reciprocating piston in said at least one cylinder,

a yoke comprising two cam follower surfaces, and

a rod joining said piston and yoke

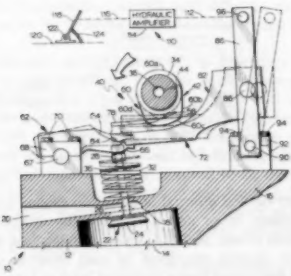
a cam means comprising at least one noncircular, finite jerk cam mounted upon said camshaft and positioned within said yoke, said cam means configured such that it maintains positive control of the yoke at all times, such that said piston and yoke assembly makes precisely two strokes for each revolution of the camshaft and such that axial motion of the yoke near top and bottom dead center differs from just simple harmonic motion.

4,459,946

VALVE ACTUATING APPARATUS UTILIZING A MULTI-PROFILED CAM UNIT FOR CONTROLLING INTERNAL COMBUSTION ENGINES

Corliss O. Burandt, Plymouth, Minn., assignor to Investment Rarities, Incorporated, Minneapolis, Minn.

Filed May 17, 1982, Ser. No. 378,843
Int. Cl.³ F01L 1/08, 1/22
U.S. Cl. 123—90.16 **20 Claims**



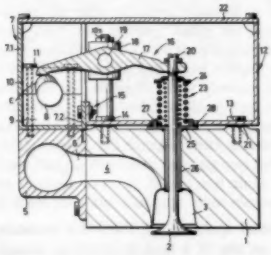
14. Apparatus for operating a reciprocable valve means associated with the combustion chamber of an internal combustion engine, said valve means having at least a certain amount of lash, the apparatus comprising first rotatable cam means having a base circle portion and an eccentric portion, said eccentric portion sloping radially outward from said base circle portion a distance corresponding generally to said amount of lash, said base circle and eccentric portions successively engaging said valve means as said first cam means rotates, second rotatable cam means having a lobe portion projecting radially outward a greater distance than said eccentric portion, said lobe portion also engaging said valve means as said second cam means rotates, and follower means engageable by said first and second cam means for transmitting motion from said first and second cam means to said valve means, said follower means including a shiftable stepped rocker arm formed with a first longitudinal portion having a straight section engageable by said first rotatable cam means at various points therealong depending on the position of said rocker arm relative to said first cam means and said rocker arm being formed with a second longitudinal portion having a curved section engageable by said second cam means at various points therealong depending on the position of said rocker arm relative to said second cam means, said first and second longitudinal portions being fixedly disposed relative to each other and moved in unison when said rocker arm is shifted relative to said first and second cam means.

4,459,947

AIR-COOLED MULTICYLINDER INTERNAL COMBUSTION ENGINE HAVING OVERHEAD CAMSHAFT

Kurt Honrath, Rösrath, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Aug. 5, 1982, Ser. No. 405,387
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1981, 3131128
Int. Cl.³ F01L 1/46
U.S. Cl. 123—90.27 **9 Claims**



1. An air-cooled, multicylinder internal combustion engine having an overhead camshaft used for all cylinders therewith and having individual cylinder heads independently thereof for all cylinders therewith, each of which is provided with valves guided therein, and with air inlet passages respectively leading to said valves, said engine comprising:

an intake pipe as a manifold flanged to said cylinder heads and provided with individual connecting passages respectively leading to said inlet passages, said intake pipe itself being the carrier and mounting element directly therewith for said camshaft independent of any individual cylinder head alignment and connection; and

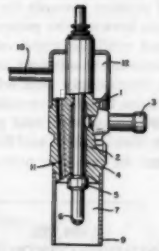
transfer elements in the form of valve actuating devices respectively operatively associated with said camshaft and said valves for effecting actuation of the latter.

4,459,948

GLOW PLUG FOR INTERNAL COMBUSTION ENGINES

Paul Bauer, Steinheim, Fed. Rep. of Germany, assignor to Beru-Werk Albert Ruprecht GmbH & Co., K.G., Ludwigsburg, Fed. Rep. of Germany

Filed Oct. 20, 1981, Ser. No. 313,319
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040906; Sep. 16, 1981, 3136852
Int. Cl.³ F02B 9/08; F02P 19/02
U.S. Cl. 123—145 A 20 Claims



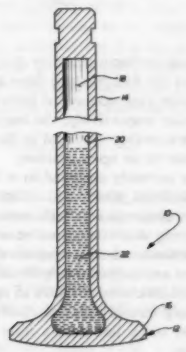
1. A glow plug for internal combustion engines, particularly as a starting aid for diesel engines, said plug comprising: a plug barrel, at least one electric heater for igniting the fuel, and a device for the metered injection of liquid fuel into the glow plug, wherein a chamber heated by the electric heater is provided for evaporating the injected liquid fuel and wherein the flow plug barrel contains concentrically arranged bores, which pass out of the plug barrel on the combustion chamber side area of the plug and are connected to an air supply line in the vicinity of the opposite plug barrel end.

4,459,949

LIQUID METAL COOLED INTERNAL COMBUSTION ENGINE VALVES WITH GETTER

Richard Weintz, Hüfingen, Fed. Rep. of Germany, assignor to Teves-Thompson GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 26, 1982, Ser. No. 411,920
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1982, 3204986
Int. Cl.³ F01L 3/14
U.S. Cl. 123—188 GC 18 Claims



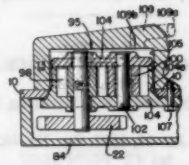
1. In an internal combustion engine valve having a head, a valve stem and a sealed cooling chamber therein containing a metal coolant, the improvement wherein said metal coolant contains a getter selected from the group consisting of zirconium, hafnium, yttrium and mixtures of the foregoing adapted to permit said coolant to move freely in the sealed cooling chamber and to reduce any increased internal vapor pressure and deposits on the cooling chamber walls resulting from contaminants, said getter adapted to interact with contaminants trapped in said sealed cooling chamber to retain said contaminants in said metal coolant without creating a heat transfer barrier on said cooling chamber walls.

4,459,950

LUBRICATION PUMP MOUNTING ASSEMBLY

Edward W. Kasting, Seymour, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Division of Ser. No. 104,914, Dec. 18, 1979, Pat. No. 4,321,896.
This application Dec. 17, 1981, Ser. No. 331,799
Int. Cl.³ F02B 77/14; F04B 17/00
U.S. Cl. 123—195 A 5 Claims



1. An accessory mounting assembly for being mounted on an internal combustion engine having an oil lubrication system including a lubrication fluid sump and a supply circuit for providing lubricant from the sump to the engine components and further including an engine block having a generally planar end wall containing a recess opening into said planar end wall, the recess containing an inlet communicating with the lubrication fluid sump and an outlet communicating with the supply circuit, said assembly comprising

(a) a gear plate for supporting engine accessories when mounted on the planar end wall and for mounting an accessory drive train designed to supply driving torque to an engine accessory, said gear plate containing an aperture positioned to align generally with said recess when said gear plate is mounted on said planar end wall; and

(b) lubrication pump means for being mounted in a position to receive driving torque from the drive train and for pumping lubricant from the lubrication fluid sump into the supply circuit, said lubrication pump means including a pump inlet for receiving lubrication fluid, a pump outlet for discharging lubrication fluid and frame means for direct connection with said gear plate to cause said lubrication pump means to extend through said aperture into said recess and to cause said pump inlet and outlet to align generally with said recess inlet and outlet, respectively.

4,459,951

OVERHEAT PREVENTING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Motoi Tobinaga, Hamamatsu, and Yutaka Nasuda, Shizuoka, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata and Sanshin Kogyo Kabushiki Kaisita, Hamamatsu, both of, Japan

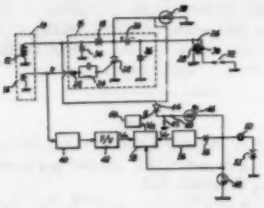
Filed Jun. 18, 1982, Ser. No. 389,897
Claims priority, application Japan, Jun. 29, 1981, 56-102058
Int. Cl.³ F02B 77/08
U.S. Cl. 123—198 DC 7 Claims

1. A system for decelerating an overheated internal combustion engine comprising;

temperature detecting means for detecting when said engine is overheated;

intermittent interrupting circuit means for intermittently

interrupting an ignition spark of said engine when said temperature detecting means detects overheating;



said intermittent interrupting circuit means adapted gradually to increase the rate of interruptions of said ignition spark, whereby said engine is smoothly decelerated.

4,459,952

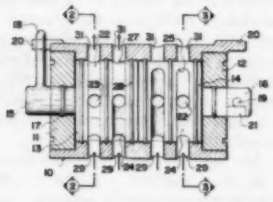
CYLINDER DEACTIVATOR DEVICE FOR DIESEL ENGINES

Edward Holstein, 284 Rouge Rd., Winnipeg, Manitoba, Canada R3K 1K2

Filed Jul. 28, 1982, Ser. No. 402,531

Int. Cl.³ F02M *63/02*

U.S. Cl. 123—198 F **8 Claims**



1. A cylinder deactivating device for use on diesel engines which include a fuel pump and fuel lines operatively connecting said fuel pump to each cylinder of the diesel engines; comprising in combination a rotary valve assembly operatively connected selectively to half of the cylinders of the engine, said rotary valve assembly including a cylindrical casing and at least one rotary valve element mounted for partial rotation within said casing, a set of ports in said casing for each cylinder connected to said rotary valve assembly and a set of fuel transfer channels in said rotary valve element for each cylinder connected to said rotary valve assembly, each set of ports including a port operatively connected to said fuel pump, a port operatively connected to said reservoir and a port operatively connected to one of the cylinders connected to said rotary valve assembly, said rotary valve element being movable from an inactive position connecting said fuel pump to said reservoir and an operative position connecting said fuel pump to the respective cylinders and vice versa, via the respective set of fuel transfer channels and said rotary valve element, each set of transfer channels including a first transfer channel extending diametrically through said rotary valve element and a second transfer channel extending radially through said rotary valve element from intermediate the ends of said first transfer channel to the surface of said rotary valve element, said first transfer channel operatively connecting said fuel pump port with said reservoir port being inactivated when said rotary valve element is in the operative position, said first transfer channel and said second transfer channel operatively connecting said fuel pump port with said cylinder port being inactive, when said rotary valve element is in the inactive position, means on said rotary valve element for reducing the angular movement of said rotary valve element from one position to the other, to the diameter of said ports, said means for reducing the angular movement of said rotary valve element including a first annular groove extending on one side of one outer end of said first transfer channel to the outer end of said second transfer channel and on the other side of said one outer end, a distance less than 90° from the longitudinal axis of said first transfer channel; and a second annular groove extending from the other end of said first transfer channel towards said other side of said first transfer channel and for a distance less than 45° from the longitudinal axis of said first transfer channel whereby when said rotary valve element is moved from the operative position towards the inactive position, the operative connection between the pump port and the cylinder port 1 is maintained until the distal edges of said first and second annular channels are adjacent said reservoir port and said cylinder port respectively; and when said rotary valve element is moved from the inactive position to the operative position, the connection between said pump and reservoir is maintained until the distal ends of said first and second annular grooves are adjacent the reservoir port and the cylinder port respectively.

4,459,953

CYLINDER-NUMBER-CONTROLLED ENGINE

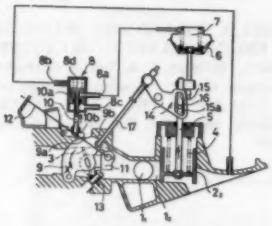
Hiroichi Mokuya; Masao Yokko, both of Kamimura; Hiroyuki Komatsu, Hamamatsu; Katsuhisa Suzuki, Hamana, and Takeo Kitayama, Shizuoka, all of Japan, assignors to Suzuki Motor Company Limited, Japan

Filed May 2, 1983, Ser. No. 490,351

Claims priority, application Japan, Sep. 10, 1980, 55-125546; Dec. 2, 1980, 55-169763; Dec. 4, 1980, 55-171395; May 29, 1981, 56-82034

Int. Cl.³ F02D *17/02*

U.S. Cl. 123—198 F **3 Claims**



1. In an engine having a plurality of cylinders, with a manifold pipe for an air fuel mixture flow to the cylinders and a plurality of intake pipe connected between the manifold pipe and each cylinder respectively, the improvement comprising:

a throttle valve movably mounted in the manifold pipe from a closed position to an open position;

a control valve movably mounted in at least one of the intake pipes from a closed position to an open position;

actuator means connected to said control valve for instantaneously opening said control valve to a selected open position, said actuator means operatively connected to said throttle valve and activatable with movement of said throttle valve from its closed position to open said control valve instantaneously to said selected open position, said selected open position being less than a fully open position of said control valve;

linkage means connected between said throttle valve and said control valve for causing movement of said control valve beyond said selected open position with movement of said throttle valve beyond a selected open position thereof;

throttle valve drive means connected to said throttle valve for moving said throttle valve from its closed position;

said actuator means comprising a vacuum actuator having a pressure chamber and a movable member bounding said pressure chamber and connected to said control valve;

a directional valve operatively engaged with said throttle valve, and connected to said pressure chamber and to the intake pipe in which said control valve is movable, downstream of said control valve with respect to said throttle valve, said directional valve being operable with movement of said throttle valve by a selected amount to communicate said pressure chamber with the intake pipe to establish a partial vacuum in said pressure chamber and instantaneously open said control valve to the selected open position.

4,459,954

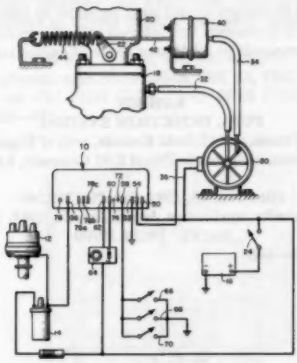
ENGINE GOVERNOR

William H. Slavik, Palos Hills, and Roger A. Swanberg, Bensenville, both of Ill., assignors to Hoof Products Co., Chicago, Ill.

Filed Aug. 13, 1982, Ser. No. 407,826

Int. Cl.³ F02M *25/06*; G05D *13/62*; F02D *11/10*

U.S. Cl. 123—350 **19 Claims**



1. In an engine governor of the type comprising driver means, responsive to a control signal, for generating a driver signal, and actuator means, responsive to the driver signal, for controlling the speed of an engine, the improvement comprising:

means for generating a first signal having a parameter which varies as a function of the speed of a device driven by the engine, said first signal having an AC ripple component;

means for repeatedly sampling the first signal in phase with the ripple component to generate a velocity signal having a ripple component less than that of the first signal; and

means for generating the control signal as a function of the velocity signal.

4,459,955

ELECTRONIC CONTROL SYSTEM

Anthony J. Adey, Gravesend, England; Alistair J. F. Ritchie, New Mills, Scotland, and Michael J. Wigglesworth, Hampsted, England, assignors to Lucas Industries Public Limited Company, Birmingham, England

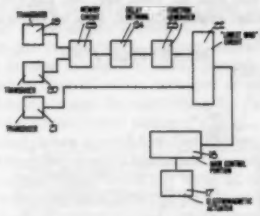
Filed Apr. 7, 1983, Ser. No. 482,895

Claims priority, application United Kingdom, May 12, 1982, 8213730

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—357 **8 Claims**

1. An electronic control system for controlling the operation of a fuel injection pump intended to supply fuel to a turbo supercharged compression ignition engine having an air inlet manifold, the system comprising a memory circuit in which can be stored test data relating to the variation of air inlet manifold pressure as a result of variation of at least one engine operating parameter, said engine operating parameter or parameters in use being supplied to said memory circuit to provide a derived air inlet manifold pressure signal.



4,459,956

GOVERNOR FOR FUEL INJECTION PUMPS

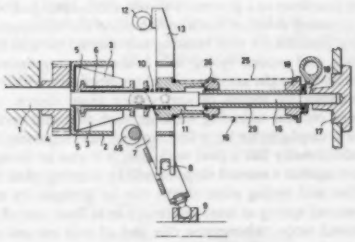
Manuel Rocs-Nierga, Barcelona, Spain; Italo Branchetti, and Mauro Forapianti, both of Leghorn, Italy, assignors to SPICA S.p.A., Leghorn, Italy

Filed Aug. 19, 1982, Ser. No. 409,407

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133898

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—373 **11 Claims**

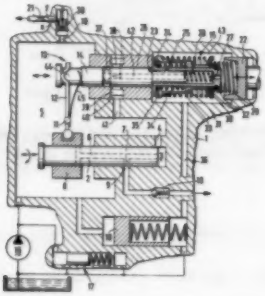


1. In a centrifugal governor for injection pumps adapted to feed internal combustion engines including an arbor having slidably mounted thereon means for regulating the quantity of fuel to be injected, centrifugal means responsive to engine speed for operating said regulating means, means responsive to sliding movement of said regulating means in a first direction for governing the speed of an associated internal combustion engine, the improvement comprising a resilient biasing unit housed upon said arbor in sliding relationship thereto between said regulating means and said speed governing means, said resilient biasing unit including a tube in external telescopic relationship to said arbor, a pair of seats mounted for relative sliding movement upon said tube and relative to each other, at least one spring between and biasing said seats away from each other, stop means at opposite ends of said tube for limiting the movement of the seats away from each other, and said regulating means and governing means being operatively coupled each to one of said seats whereby upon movement of said regulating means in said first direction, said movement is transferred through a first of said seats, said spring and a second of said seats to said governing means.

4,459,957
FUEL INJECTION PUMP

Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 22, 1980, Ser. No. 123,535
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909588
Int. Cl.³ F02D 17/06
U.S. Cl. 123—387 **12 Claims**



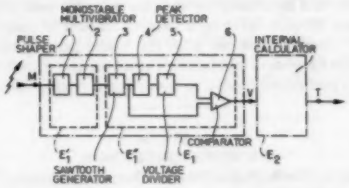
1. A fuel injection pump for internal combustion engines having a housing provided with an rpm governor, said governor including an adjusting member having one portion arranged to actuate a fuel quantity control member of said pump and further is engaged by an rpm-dependent adjustment force counter to the force of at least two springs of unequal strength, a first of said springs being weaker over its entire stroke than the second of said springs, characterized in that said first spring functions as a starting spring and is supported on one end directly on said adjusting member and on the other end on an element adjustable in accordance with load, and said second spring functions as a governor spring and is arranged to engage said adjusting member via a spring plate sleeve supported in a starting position on said housing and guided on said adjusting member, said second spring acts as the main regulating spring and can be brought into functional connection with said adjusting member by means of said spring plate sleeve, which is disposed on said adjusting member such that said spring plate sleeve is displaceable by a first stop on said adjusting member and additionally has a part with which it can be brought into contact against a second stop formed by a spring plate bushing, and that said spring plate sleeve can be brought by means of said second spring at least indirectly to at least one of the first or second stops, whereupon one end of said second spring is supported at least indirectly by a coupler member adjustable arbitrarily in accordance with the desired load.

4,459,958
ELECTRONIC DEVICE RECEIVING AN IGNITION SIGNAL FROM AN INTERNAL COMBUSTION ENGINE AND SUPPLYING A SIGNAL POSITIONED IN RELATION TO TOP DEAD CENTER

Jean-Francois Latapie, Roquettes, France, assignor to Equipements Automobiles Marchal, Issy-les-Moulineaux, France

Filed Aug. 10, 1982, Ser. No. 406,790
Claims priority, application France, Aug. 11, 1981, 81 15541
Int. Cl.³ F02P 5/04
U.S. Cl. 123—425 **11 Claims**

1. In an electronic device connected to a periodic generator of ignition signals for an internal combustion engine in which the generated ignition signal is displaced in each cycle in relation to the top dead centre of the piston in the cylinder to be subjected to ignition, by a value which is variable according to the engine speed of rotation, said electronic device receiving an input signal and supplying a periodic first signal whose start and finish are, in each period, positioned in relation to the top dead centre in said cylinder with a predetermined error margin, said electronic device comprising first circuit means effective to supply a second signal defining the start of the first signal but with a time shift in relation to said input signal and second circuit means effective to receive the output second signal from said first circuit means and to generate a third

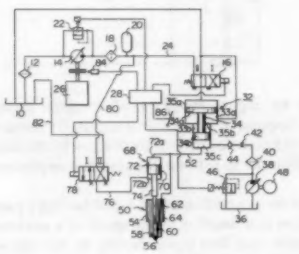


signal which defines the finish of said periodic first signal with a time shift in relation to said input signal, the improvement wherein said second signal supplied by said first circuit means is displaced in relation to said input signal by an interval which is the sum of a constant first interval and of a second interval which corresponds to a constant angle of engine rotation.

4,459,959
FUEL INJECTION SYSTEM

Tomohiko Terada, and Hideaki Komada, both of Higashi Matsuyama, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jan. 15, 1982, Ser. No. 339,347
Claims priority, application Japan, Jan. 24, 1981, 56-9167
Int. Cl.³ F02M 39/00
U.S. Cl. 123—446 **12 Claims**



1. A fuel injection system comprising, in combination:
a source of fuel supply;
a booster operated by a pressure differential between opposite ends thereof to compress fuel fed from the source of fuel supply to one end thereof;
a fuel injector for injecting a supply of compressed fuel from the booster;
a nozzle needle actuator operatively assocaited with the fuel injector and operated by a pressure differential between opposite ends thereof to start and terminate a fuel injection by the fuel injector, the supply of compressed fuel from the booster being also fed to one end of the nozzle needle actuator to develop a fuel pressure at the one end thereof;
fuel circuit means for feeding the fuel from the source of fuel supply to the fuel injector and the one end of the nozzle needle actuator through the one end of the booster;
a source of hydraulic fluid supply;
first hydraulic circuit means communicated with the source of hydraulic fluid supply for producing a variable hydraulic fluid pre-sure, the variable hydraulic fluid pressure

being fed to the other end of the booster as a first hydraulic fluid pressure to compress the fuel in the one end of the booster, the first hydraulic circuit means comprising a pump communicated with the source of hydraulic fluid supply at the suction port thereof;

second hydraulic circuit means for selectively communicating the other end of the nozzle needle actuator to the source of fluid supply and the first hydraulic circuit means to develop a second hydraulic fluid pressure at the other end of the nozzle needle actuator;

control means for controlling the first and second hydraulic fluid pressures in the first and second hydraulic circuit means; and

a first direction control means controlled by the control means to selectively communicate the other end of the booster with the pump and the hydraulic fluid supply, the first direction control means comprising an electromagnetically operated 2-position, 4-port control valve.

4,459,960

SPLIT ENGINE

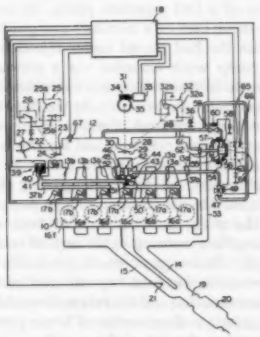
Makoto Ueno, Shizuoka, and Kohei Hori, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 9, 1983, Ser. No. 465,257

Claims priority, application Japan, Oct. 22, 1982, 57-184435

Int. Cl.³ F02D *17/00, 17/02;* **F02B** *77/00*

U.S. Cl. 123—481 **20 Claims**



1. A split engine having a plurality of cylinders which are divided into a first cylinder group and a second cylinder group, said engine comprising:

a first intake passage having an inlet and an outlet connected to said first cylinder group;

a second intake passage having an inlet and an outlet connected to said second cylinder group, the inlet of said first intake passage being connected to said second intake passage and the inlet of said second intake passage being open to the outside air;

an exhaust passage connected to said first cylinder group;

a manually operated throttle valve arranged in the inlet of said second intake passage;

first detecting means for detecting the level of the load of the engine and for producing an output signal representing the level of the load of the engine;

second detecting means for detecting the decelerating operation of the engine and for producing an output signal indicating that the decelerating operation is carried out;

electronic control means for producing control signals in response to the output signals of said first detecting means and said second detecting means;

fuel supply means, actuated in response to a control signal of said electronic control means, for feeding fuel into only said second cylinder group when the level of the load of the engine is lower than a predetermined level and for feeding fuel into both of said cylinder groups when the level of the load of the engine is higher than the predetermined level, said fuel supply means stopping the supply of fuel into both of said cylinder groups when a predetermined first time period has elapsed after the decelerating operation of the engine is started;

an exhaust-gas recirculation passage interconnecting said exhaust passage to said first intake passage;

a recirculation control valve, arranged in said exhaust-gas recirculation passage, for controlling the flow area of said exhaust-gas recirculation passage;

first actuating means operated in response to a control signal of said electronic control means and opening said recirculation control valve when the level of the load of the engine becomes lower than the predetermined level, said first actuating means closing said recirculation control valve independently of the level of the load of the engine when a predetermined second time period has elapsed after the decelerating operation of the engine is started;

a shut-off valve, arranged in the inlet of said first intake passage, for controlling the flow area of the inlet of said first intake passage; and

second actuating means operated in response to a control signal of said electronic control means and opening said shut-off valve when the level of the load of the engine becomes higher than the predetermined level, said second actuating means opening said shut-off valve independently of the level of the load of the engine when the predetermined second time period has been elapsed after the decelerating operation of the engine is started.

4,459,961

FUEL INJECTION CONTROL METHOD

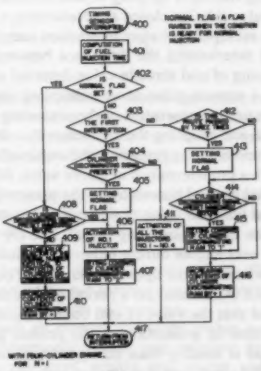
Hiroyuki Nishimura, Konosu; Shumpei Hasegawa, Niiza; Masahiro Watanabe, Sagamihara, and Takehiko Hosokawa, Yokohama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Matsushita Electric Industrial Co., Ltd., Osaka, both of, Japan

Filed Feb. 12, 1982, Ser. No. 348,428

Claims priority, application Japan, Feb. 17, 1981, 56-22579

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—491 **6 Claims**



1. A method of controlling fuel injection adapted for a fuel injection control system comprising:

a crank angle sensor for generating crank angle pulses at specified crank angles during a plurality of rotations of a crank shaft of an engine having a plurality of cylinders;

a timing sensor for sequentially generating timing pulses between the crank angle pulses;

a plurality of injectors respectively mounted to each of the cylinders of the engine; and

a controller for computing a fuel injection time for each of the injectors upon being interrupted by each of the timing pulses and controlling the fuel injection timing for each of the injectors,

said controlling method being such that fuel is injected from all the injectors by only the N-th timing pulse before the (N+M−1)-th timing pulse occurs following start-up of the engine, where N is an integer not greater than M and M represents the number of fuel injection timings during two rotations of the crank shaft, and the fuel is injected from the injectors specified by the crank angle pulses and the timing pulses after the (N+M)−th timing pulse occurs.

4,459,962

METHOD FOR CONTROLLING FUEL SUPPLY TO AN INTERNAL COMBUSTION ENGINE AT DECELERATION

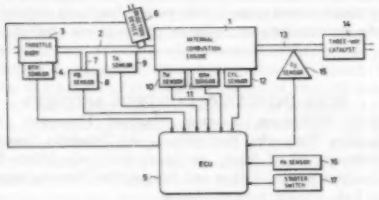
Akihiro Yamato, Shiki, and Shigeo Umesaki, Iruma, both of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,359

Claims priority, application Japan, May 18, 1982, 57-83598

Int. Cl.³ F02D *5/02*

U.S. Cl. 123—493 **4 Claims**



1. A method for controlling the quantity of fuel being supplied to an internal combustion engine having an intake passage and a throttle valve arranged therein, at deceleration thereof, by electronic means, the method comprising the steps of: (1) detecting the valve opening of said throttle valve while said throttle valve is being closed at deceleration of said engine and each time each pulse of a predetermined sampling signal is generated, (2) determining the difference between a value of the valve opening of said throttle valve detected at the time of generation of a present pulse of said sampling signal and one detected at the time of generation of the preceding pulse of said sampling signal and adapting the difference thus determined as a control parameter, (3) comparing the value of said control parameter with a predetermined negative value, (4) comparing the value of said control parameter at the present pulse of said sampling signal with the value of said control parameter at the preceding pulse of said sampling signal, and (5) interrupting fuel supply to said engine during either of the following periods of time, in dependence upon results of said comparison at the steps (3) and (4) thereof: (a) a period of time during which it is determined that the value of said control parameter determined at the time of generation of the present pulse of said sampling signal is smaller than said predetermined negative value, and at the same time it is smaller than the value of said control parameter at the preceding pulse of said sampling signal, and (b) a period of time starting from a time it is judged for the first time that the value of said control parameter at the present pulse of said sampling signal has exceeded the value of said control parameter at the preceding pulse of said sampling signal, while at the same time, the value of said control parameter at the present pulse of said sampling signal is smaller than the aforementioned predetermined negative value, until a first predetermined period of time elapses.

4,459,963

ELECTRICALLY CONTROLLED FUEL INJECTION APPARATUS FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINES

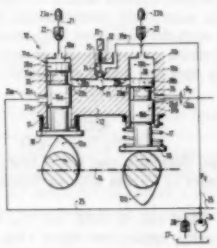
Werner Gross, Ismaning, and Max Straubel, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,375

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112381

Int. Cl.³ F02M *39/00*; F02D *1/04*

U.S. Cl. 123—506 **26 Claims**



1. An electrically controlled fuel injection apparatus for multi-cylinder internal combustion engines, in which each pump piston of a fuel injection pump, driven at a constant stroke by a drive cam of a camshaft and guided in a cylinder bore, supplies the fuel placed under injection pressure in an associated pump work chamber via a pressure valve to an injection nozzle until such time as a valve element of an electrically actuated overflow valve blocks the flow of the fuel overflowing from the pump work chamber via an overflow conduit to a chamber of lower pressure, said apparatus having an inlet opening of a filling conduit which is under the supply pressure p_V of a supply pump, the inlet opening being closable by a first control face on the jacket face of the pump piston after a pre-stroke H_V of the pump piston has been completed, and having an overflow opening in the wall of each cylinder bore serving as the discharge point of the oveflow conduit, the overflow conduits of at least two adjacent pump work chambers are interconnected and the return flow of fuel out of these overflow conduits to the chamber of lower pressure is controllable by the valve element of the overflow valve common to these overflow conduits, that the overflow conduits are each provided with a barrier valve, by means of which the at least one pump work chamber which is not under injection pressure can be blocked off from the pump work chamber which is under injection pressure at that time, and a second control face on the pump piston closing the overflow opening in one of the dead center positions of the pump piston acts as the barrier valve.

4,459,964

FUEL SUPPLY APPARATUS FOR INTERNAL COMBUSTION ENGINES

Max Straubel, and Gerhard Stumpp, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 14, 1982, Ser. No. 388,329

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1981, 3127543

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—569 **8 Claims**

1. In a fuel supply apparatus for internal combustion engines:

a fuel injection pump for supplying a regulatable fuel injection quantity drawn out of a suction chamber of said pump, said chamber having inlet and outlet conduits and being supplied with fuel under rpm dependent pressure;

an exhaust gas recirculation means controlled in accordance with fuel quantity;

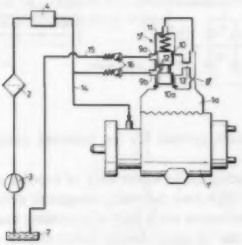
and an overflow valve in said suction chamber discharge conduit,

said overflow valve being controlled by the rpm dependent pressure of the fuel in said pump suction chamber and operative upon being opened to connect the suction chamber to a heat exchanger to provide a heat exchange circuit for the fuel,

said overflow valve being preset such that the pressure ($p_{\ddot{u}}$) effecting its opening is greater than the maximum pressure of the injection pump in an exhaust gas test range.

2. In a fuel supply apparatus for internal combustion engines:

a fuel injection pump for supplying a regulatable fuel injection quantity drawn out of a suction chamber of said pump, said chamber having inlet and outlet conduits and being supplied with fuel under rpm dependent pressure;



an exhaust gas recirculation means controlled in accordance with fuel quantity;

and an overflow valve in said suction chamber discharge conduit;

said overflow valve comprising a two-way valve having a spring-loaded piston controlled by said pump interior pressure (p_{pi}) and opening each of two discharge openings in said valve selectively, wherein at a pump suction chamber pressure corresponding to an engine rpm which is within the exhaust gas test range, a discharge line is opened toward said pump inlet conduit downstream of said fuel quantity meter while at a pump interior pressure which corresponds to an rpm outside an exhaust gas test range, the discharge conduit is opened by way of said fuel supply container, for effective cooling and ventilation of said fuel injection pump at a predetermined operational range.

4,459,965

CONTROL INSTALLATION FOR AN EXHAUST GAS FEEDBACK SYSTEM

Thomas Brachert, Wiernsheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Stuttgart, Fed. Rep. of Germany

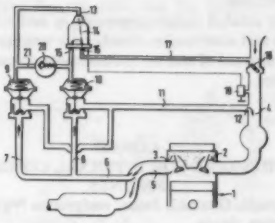
Filed May 6, 1983, Ser. No. 492,192

Claims priority, application Fed. Rep. of Germany, May 11, 1982, 3217608

Int. Cl.³ F02M *25/06*; F02D *21/08*

U.S. Cl. 123—571 **6 Claims**

1. A control installation for the feedback of exhaust gases into the suction line of a piston internal combustion engine, comprising a first adjusting valve means connected into a feedback line means, and shifting valve means operatively connected with the suction line within the area of a throttle valve means for controlling the adjusting valve means, characterized in that a second adjusting valve means is connected in the feedback line means in parallel with the first adjusting valve means, and in that both adjusting valve means are controlled by a three-way shifting valve means which is shiftable by a pressure sensor connected to the suction line.



4,459,966

APPARATUS FOR THE RETURN OF CRANKCASE VAPORS INTO A COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

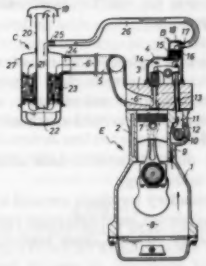
Kenji Sakano; Hiroo Sakanaka, and Kazutoshi Okamoto, all of Sakaishi, Japan, assignors to Kubota Limited, Osaka, Japan

Filed Sep. 30, 1981, Ser. No. 307,162

Claims priority, application Japan, Aug. 4, 1981, 56-116641[U]

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—573 **4 Claims**



1. In an apparatus which separates and removes oil contaminates from crankcase vapors which emanate from a crankcase of an internal combustion engine and returns said vapors to a combustion chamber of said internal combustion engine, comprising:

(a) a breather device located on said engine in fluid communication with said crankcase and exposed to said crankcase vapors and contaminants upon exit of said vapors from said engine;

(i) said breather device provided with filter elements which separate and remove a primary portion of said oil contaminants from said vapors;

(b) an oil-bath air cleaner contained within a casing and in fluid communication with said breather device; cleaner elements contained within said casing and an oil-bath chamber is provided below said cleaner elements and within said casing;

(c) pipe means provided in said casing; a first end of said pipe protruding outside of said casing for introducing outside air into said casing, and a second end of said pipe extending into said casing to a point slightly above said oil-bath chamber;

(d) a vapor inlet connected to said breather device and to said pipe means; said vapors and residual oil contaminants flow through said inlet to said oil-bath cleaner;

(i) said vapors and said residual oil contaminants mix with said outside air and are exposed to said oil-bath and said cleaner elements to remove said residual oil contaminants; and

(e) outlet conduit means connected to said oil-bath cleaner and to said combustion chamber for returning the vapors, in the absence of said oil contaminants, to said combustion chamber.

4,459,967

IGNITION COIL FOR INTERNAL COMBUSTION ENGINES

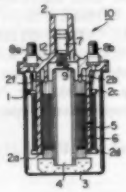
Toshio Hayashi, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 22, 1981, Ser. No. 304,560

Claims priority, application Japan, Sep. 24, 1980, 55-133224; Jul. 14, 1981, 56-110165

Int. Cl.³ F02P *3/02*

U.S. Cl. 123—634 **8 Claims**



1. An ignition coil for internal combustion engines, said ignition coil comprising:

a casing made of iron;

a coil cap made of a high pressure-resistant insulating resin and secured to said casing to close the open end thereof;

a central core contained in said casing;

a secondary coil disposed around said central core and contained in said casing;

a primary coil disposed around said secondary coil and contained in said casing;

primary and secondary terminals secured to said coil cap;

a high pressure-resistant, insulating body interposed between said central core and the inner bottom surface of said casing;

an insulating oil filled in said casing; and

a spring intervening between said central core and said secondary terminal to bias said central core against said high pressure-resistant, insulating body;

said coil cap including a cylindrical-shaped leg portion shaped to extend toward the bottom surface of said casing and enclose said secondary coil, a small cylindrical portion disposed inwardly of said leg portion to extend toward said secondary coil within said cylindrical-shaped leg portion and to securedly press said second coil toward the inner bottom surface of said casing through the medium of said high pressure-resistant, insulating body, and flange portions integrally provided on the upper and lower peripheral ends of said cylindrical-shaped leg portion, said primary coil being wound round the periphery of said cylindrical-shaped leg portion between said flange portions, the end of said cylindrical-shaped leg portion facing both the inner bottom surface of said casing and said insulating body with gaps therebetween, and the inner peripheral surface of said cylindrical-shaped leg portion cooperating with said secondary coil to define a further gap therebetween, so that the inner and outer peripheral surfaces of said cylindrical-shaped leg portion are communicated to each other through said respective gaps.

4,459,968

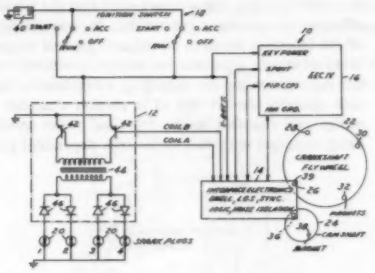
IGNITION SYSTEM

Arnold W. Brandt, Livonia; David H. Fox, and Richard H. Lawton, both of Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 27, 1983, Ser. No. 499,015

Int. Cl.³ F02P *1/00, 5/04*

U.S. Cl. 123—643 **7 Claims**



1. An ignition system for an internal combustion engine including:

a flywheel coupled to a plurality of bipolar magnets having end faces with two opposing magnetic poles with a transition line between each pair of opposing magnetic poles on each bipolar magnet being substantially aligned with a radius of said flywheel, and said bipolar magnets being positioned at spaced intervals around said flywheel;

a camshaft having coupled thereto a unipolar magnet having an end face with a single magnetic pole;

a bipolar flywheel Hall sensor positioned adjacent said flywheel for detecting passage of said bipolar magnets and generating a square wave signal to provide camshaft position; and

a unipolar camshaft Hall sensor positioned adjacent said camshaft for detecting passage of said unipolar magnet and generating a square wave signal to provide a reference signal indicating when a bipolar magnet is in a known position associated with a predetermined cylinder.

4,459,969

OVERHEAD RADIUS DRESSER FOR GRINDING WHEELS

Edwin Russ, 985 Badder, Troy, Mich. 48084

Filed Jan. 15, 1982, Ser. No. 339,267

Int. Cl.³ B24B *53/06*

U.S. Cl. 125—11 AT **6 Claims**

1. An overhead radius dresser for a grinding wheel for surface grinding or the like, with the grinding wheel being rotatable upon a first axis and having a spindle, said overhead radius dresser comprising;

a main housing having a cylindrical bore mounted upon said spindle;

a manually rotatable main shaft journaled within said housing reciprocally rotatable upon a second axis at right angles to and spaced from said first axis;

a slide plate at right angles to and mounted upon said shaft having the same axis as said second axis and also having a transverse axis parallel to said first axis;

a slide housing mounted upon and in registry with said slide plate and said second axis and adapted to travel along said transverse axis and said slide plate in opposite directions across said second axis;

a slide arm mounted upon and depending from said slide housing for longitudinal adjustments towards and away from said second axis;

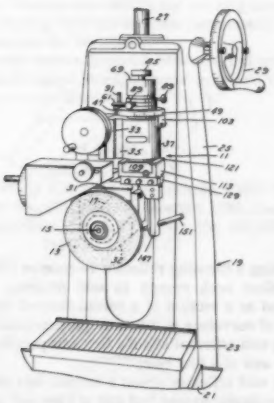
a diamond holder arm secured to and depending from said slide arm;

a diamond tool adjustably mounted upon and extending transversely of said holder arm having a diamond head in registry with said second axis of rotation adapted for operative engagement with the grinding wheel during rotation thereof;

manual reciprocal rotation of said main shaft over a predetermined arc from a central position adapted to dress a corresponding radius in the grinding wheel periphery;

said slide housing remaining in registry with said slide plate and said second axis during selective rotation of said main shaft in both directions relative to said central position for normal radius dressing of the grinding wheel;

said slide housing being adapted for lateral movement relative to said slide plate along said transverse axis, after the main shaft is fully rotated in one direction from said central position, said diamond head moving tangentially from its initial arc of rotation for tangentially dressing the flat outer angle of the grinding wheel;



and stop screw means including a pair of reciprocally movable pins mounted upon and interposed between said slide plate and slide housing to facilitate stopping at the second axis and adapted to retainingly engage said slide housing against travel along said transverse axis relative to said slide plate;

and further adapted to selectively facilitate said travel for tangential surface dressing of tangential angles of the grinding wheel;

said stop screw means including an elongated tangent pin extending transversely between said slide plate and slide housing having a head adapted to engage the corresponding one sides of said slide plate and slide housing;

an oppositely directed hollow pin extending between said slide plate and slide housing guidably receiving said tangent pin and having a head adapted to engage the corresponding other sides of said slide plate and slide housing;

and a screw extending axially into said hollow pin and threaded into said tangent pin, and having a head normally tight against said hollow pinhead, said tangent pin adapted for reciprocal movements relative to said hollow pin when said screw is removed.

4,459,970

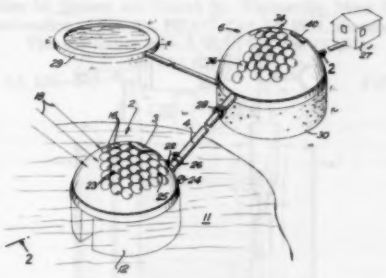
SOLAR STEAM GENERATING AND DISTRIBUTION SYSTEM

Douglas Clee, 142 Garth Rd., Scarsdale, N.Y. 10583

Filed Dec. 14, 1981, Ser. No. 330,035

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—415 **3 Claims**



1. A system for the generation and distribution of steam by solar energy comprising apparatus for the solar energy generation of steam comprising an enclosed structure over the surface of a body of source water, said enclosed structure having a plurality of transparent lenses, said lenses adapted to receive incident solar rays and focus said rays at or just below the surface of said source water within a limited area to cause surface boiling of said source water to generate steam within said enclosed structure, and distribution conduits from said structure to a place remote from said structure and booster stations communicating with said apparatus through said conduits, said booster stations comprising a reservoir for storing condensed water from said apparatus, an enclosure over said reservoir including at least one transparent lens to focus incident solar rays at or just below the surface of said condensed water in said reservoir within a limited area to regenerate steam within said station, and outgoing distribution conduits to places remote from said booster stations.

4,459,971

SUPPORT AND ORGANIZER FOR COMPONENTS OF SOLAR HEATING SYSTEMS AND THE LIKE

Jurg H. Bieri, and Thomas M. Ingraham, both of El Cerrito, Calif., assignors to Hellodyne, Inc., Richmond, Calif.

Filed Jul. 2, 1982, Ser. No. 394,510

Int. Cl.³ F24J *3/02;* **F16L** *3/00*

U.S. Cl. 126—417 **6 Claims**

1. A support and organizer for components of solar heating systems and the like comprising:

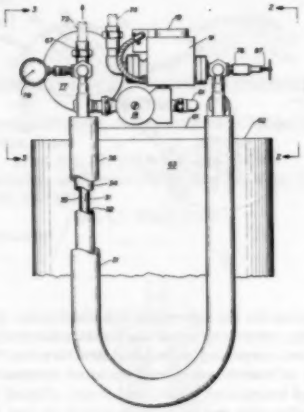
a pair of elongated members mounted in substantially parallel relation and being spaced apart by a distance permitting positioning therebetween of a pair of superimposed pumps and unitarily mounted electric motor drives therefor and further permitting mounting directly upon the top of a storage tank;

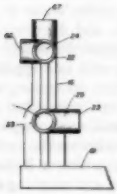
said elongated members being formed with internal passages terminating in a first pair of ports and a second pair of ports adapted for connection to and supporting a heat exchanger, said heat exchanger having a tubular source heated fluid passage and a tubular exchange heated fluid passage, said exchange heated fluid passage being formed and positioned within said source heated fluid passage, each of said fluid passages terminating in ports, said first pair of ports of said elongated members being connected to said source heated fluid passage ports and said second pair of ports of said elongated members being connected to said exchanger heated fluid passage ports;

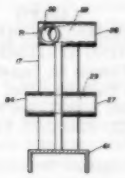
said elongated members being further formed with passages

communicating with said internal passages and terminating in ports adapted for connection to a source of heated fluid and said storage tank and further being adapted for connection to and support of an expansion tank;

said source heated fluid passage and said first pair of ports providing a heated source loop circuit comprising an inlet







connection from said heat source, one of said pumps, said source heated fluid passage, and said expansion tank, and said exchange heated fluid passage and said second pair of ports providing a heated transfer loop circuit comprising an inlet connection for said storage tank, an outlet connection for said storage tank, the other of said pumps, and said exchanger heated fluid passage.

4,459,972

HELIOSTAT ASSEMBLY

Walter T. Moore, Camarillo, Calif., assignor to Veda Incorporated, Arlington, Va.

Filed Oct. 6, 1981, Ser. No. 309,053
Int. Cl.³ F24J 3/02
U.S. Cl. 126—424 **27 Claims**

1. A heliostat comprising:

a concave focusing reflector formed as a section of a toroid defined by two unequal radii of curvature in mutually perpendicular planes;

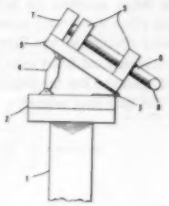
means for defining a first axis parallel to the earth's polar axis;

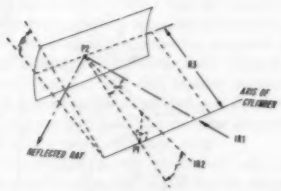
means for defining a declination axis perpendicular thereto, said means defining said declination axis being fixed to said means defining said first axis;

mounting means for mounting said reflector for rotation about said declination axis and about said first axis; and

means for driving said reflector in rotation at variable speed about both said axes.

3. A method for directing solar energy to a fixed position comprising:





positioning a focusing reflector to receive solar energy and to reflect such energy to said position, said reflector formed as a section of a toroid defined by two unequal radii of curvature in mutually perpendicular planes;

rotating said reflector about a first axis parallel to the earth's polar axis at a first rate;

rotating said reflector about a second axis intersecting and perpendicular to said first axis at a second rate, rotation of said reflector about said second axis being independent of rotation of said reflector about said first axis; and

simultaneously rotating said second axis about said first axis at said first rate.

4,459,973

SOLAR PANEL CONSTRUCTION FOR BUILDINGS

George R. Royer, 2137 Ragan Woods Dr., Toledo, Ohio 43614

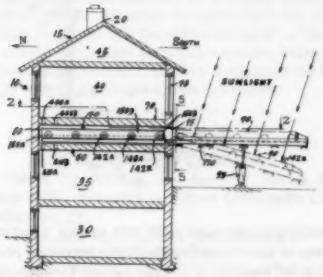
Filed May 11, 1982, Ser. No. 377,147
Int. Cl.³ F24J 3/02
U.S. Cl. 126—431 **2 Claims**

1. A building construction having one or more story levels within the building utilized for living purposes in combination with movable solar radiation absorption panels, said combination comprising:

(a) a building having one or more living areas on each story level, said building having vertical walls separating said living areas from the area outside the building and having a floor under each said story level, wherein one or more of said living areas are disposed above each said floor, with one or more solar panel storage spatial areas disposed beneath at least a portion of the floor under the respective living area, each said solar panel storage spatial area having an opening extending between said solar panel storage spatial area and an adjacent vertical wall to said area outside the building;

(b) support and transport means within the solar panel storage spatial area beneath each floor to receive and hold a solar panel member within said solar panel storage spatial area;

(c) a separate solar panel member mounted for slidable movement on the support and transport means in each of the solar panel storage spatial areas, whereby each such



mounted solar panel is movable to the solar panel storage spatial area, from an area outside the building through said opening extending between the solar panel spatial area and said area outside the building;

(d) heat transfer means disposed between and connecting each said solar panel storage spatial area and the living area adjacent each floor.

4,459,974

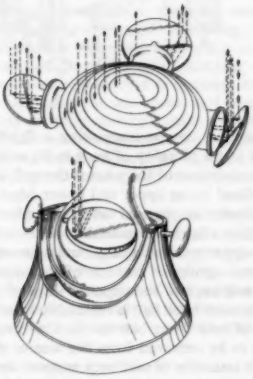
SOLAR BOTTLE

Mark S. Lang, 771 D Ave., Apt. A, Coronado, Calif. 92118

Continuation of Ser. No. 208,052, Nov. 17, 1980, abandoned. This application Feb. 3, 1983, Ser. No. 463,509

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—440 **3 Claims**



1. A solar collector comprising

a convergent lens having a concentrically serrated surface and forming the front boundary of a heating chamber,

a convex reflector defining the rear boundary of said heating chamber,

said convergent lens and said reflective surface being arranged so as to focus incident light upon a common target within the chamber,

a housing formed integrally with said reflector,

a plurality of tubular members extending radially from said housing, and

a plurality of side mirrors, each of said mirrors being pivotally mounted upon the distal end of a respective one of said tubular members whereby each mirror can be adjusted to regulate the amount of light reflected through its respective tubular member into said heating chamber.

4,459,975

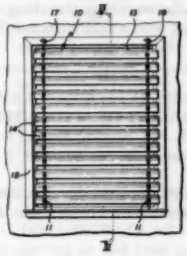
SOLAR ENERGY CONVERTER

William M. Hobart, 425 Church St., Whitinsville, Mass. 01588

Continuation of Ser. No. 197,677, Oct. 16, 1981, abandoned. This application Nov. 3, 1981, Ser. No. 317,831

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—449 **4 Claims**



1. Solar energy converter, comprising:

(a) a support adapted to be mounted on the inside of the frame of a window, and

(b) a plurality of slats mounted on the support in spaced positions, each slat being curved in the transverse direction with the convex side facing the sun, each slat being formed of a material having high thermal absorption and having the said convex side covered with a heat absorbing coating, wherein the said support consists of two spaced parallel vertical beams, each beam having a rectangular horizontal cross-section, each slat having slots through which the beams pass, each beam having a notch to receive an end of said slot, wherein each slat consists of two slidably adjustable parts.

4,459,976

HEAT EXCHANGER OR SOLAR COLLECTOR

Philip C. Speros, 10293 Prouty Rd., Painesville, Ohio 44077

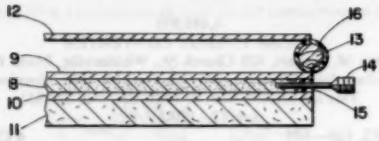
Continuation-in-part of Ser. No. 225,254, Jan. 15, 1981, abandoned. This application Nov. 3, 1982, Ser. No. 438,767

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—449 **18 Claims**

1. In a solar collector unit, the combination of a heat transfer pack consisting of compressed discrete particles of radiation energy-absorbing solid matter having a mean diameter of no more than 750 microns and having a thermal diffusivity constant of at least 0.5 cm^2/sec at 20° C., said particles being immobilized relatively to each other by a pack pressure suffi-

cient to maintain said particles in physical and thermally-conductive contact with each other during operating conditions, said particles providing a plurality of interstitial fluid passage-



ways through said pack, and an enclosure for retaining said particles in solar radiation energy-absorbing relationship and in heat transfer contact with a fluid directed through said pack.

4,459,977

CORONARY SINUS RETROPERFUSION APPARATUS FOR THE TREATMENT OF MYOCARDIAL ISCHEMIA

Véronique Pizon, 7, rue Nicolas Houël, F-75005 Paris, and Jean-Christian Farcot, 39, rue Spontini, F-75016 Paris, both of France

Filed Feb. 19, 1982, Ser. No. 350,381
Claims priority, application France, Mar. 27, 1981, 81 06160
Int. Cl.³ F16K *15/00*
U.S. Cl. 128—1 D **20 Claims**

1. A blood retroperfusion apparatus comprising:
a connecting tube open at both ends and adapted to connect a source of oxygenated blood and the zone to be irrigated;
a flexible-balloon catheter provided on the end of said tube which is adapted to be engaged in the zone to be irrigated, said balloon comprising reinforcement means extending in the longitudinal direction;
a pulsatile unit arranged on said tube and connected to control means whereby a predetermined quantity of oxygenated blood can be driven periodically by said unit towards the catheter;
an electronic device for maintaining the pulsatile unit and its control means in step with the patient's heartbeat rate;
and means to synchronize said device with an electrocardiogram (ECG) of the patient in order to control the injection of blood into the coronary sinus by means of the pulsatile unit and to allow the vitiated blood to flow back in the opposite direction during a systole.

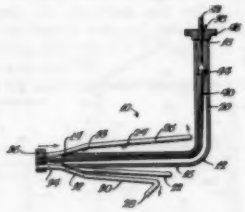
4,459,978

MEDICAL RETRACTOR DEVICE

Constantine Kotsanis, River Grove, Ill., assignor to Endoscopy Surgical Systems, Inc., White Haven, Pa.

Filed May 17, 1982, Ser. No. 378,874
Int. Cl.³ A61B *17/02*
U.S. Cl. 128—20 **9 Claims**

1. A medical device, comprising:
tube means having a cammed end and a distal end;
wrist mounting means axially spaced from said tube means;
a plurality of fingers each having an unattached end and an attached end connected to said wrist mounting means, each of said fingers having a cam-engaging surface facing generally inwardly and towards said cammed end of said tube means; and
pulling means extending through said tube means for pulling said inward cam-engaging surfaces of said fingers into



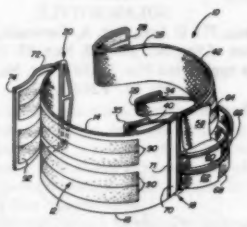
camming engagement with said cammed end of said tube means to move said fingers from a retracted position to an expanded position to engage against the internal wall of a tubular organ and retain the medical device at a desired anatomical site.

4,459,979

ANTILORDOSIS BELT

Royce C. Lewis, Jr., 3801 21st St., Lubbock, Tex. 79410

Filed Sep. 16, 1982, Ser. No. 419,060
Int. Cl.³ A61F *5/02*
U.S. Cl. 128—78 **11 Claims**



1. A back support device comprising a flexible relatively wide front belt and a plurality of back belts; said front belt is for girdling the abdomen of the wearer thereof; said front belt has a width defined by an upper and lower edge portion, said front belt terminates at opposed sides; said plurality of back belts jointly define a back belt assembly, said back belt assembly includes an upper and lower edge, and opposed sides; a side brace attachment connected to each of the opposed sides of said front belt and each of the opposed sides of the back belt assembly so that each back belt is releasably connected to said opposed sides of said front belt to thereby enable the back support device to be removed from the wearer thereof;
said back belt assembly of said back support device includes an upper belt, a lower belt, and a central belt with said central belt being located between the upper and lower belts; said upper, lower, and central belts can be spaced from one another;
said side brace attachment is a relatively inflexible elongated planar frame comprising rod-like members and extends parallel to said opposed sides of the front belt;
each side brace attachment includes one forward aperture and two rearward apertures; a first substantially linear rod-like member of said side brace frame represents a first side of the forward aperture and a first side of both rearward apertures; a second substantially rod-like member extends from said first rod-like member and represents a

second side of both rearward apertures; said forward aperture receives one end of the front belt while said rearward apertures receive the ends of the upper, lower and central belts of the back belts; there being at least one belt received through each aperture so that said side brace attachment provides a means by which the upper, lower, and central belts are maintained spaced apart from one another;

and the back support device can be arranged respective to the wearer thereof whereby the lower belt fits over the hips while the upper belt fits above the small of the spine, and with each belt of the back belt assembly being placed in tension by the front belt, thereby restraining the back in a manner which prevents increased lordosis.

4,459,980

ANKLE AND FOOT BRACE

Donald A. Perser, Northbrook, and Erich W. Mohn, Morton Grove, both of Ill., assignors to Ballert Orthopedic Corporation, Northbrook, Ill.

Filed Jun. 18, 1982, Ser. No. 389,690

Int. Cl.³ A61F *3/00*

U.S. Cl. 128—80 E **3 Claims**

1. An ankle and foot brace mountable to a shoe and adjustable readily to fit numerous sizes of shoes and legs, said brace comprising:

a pair of spaced leg members, each leg members having means for adjusting the length of said leg member;

adjustable means for attaching said brace to the calf of a wearer, said attachment means including a pair of calf bands respectively connected to opposite ends of said leg members, extending in use about said wearer's calf for respectively securing said leg members thereto, and cooperating to surround the wearer's calf, with the free ends of one of said calf bands respectively disposed and attachable in overlapping relationship with the free ends of the other said calf bands;

means for biasing the other end of each said leg member to provide dorsiflexion assistance to a wearer's shoe; and

adjustable means for clamping said leg members adjacent to the lower ends thereof and attaching in use about said wearer's shoe for securing said leg members thereto,

said clamping means carried by said leg members and extending rearward along and in contact with said wearer's shoe.

4,459,981

BREATHING BAG FOR CLOSED CYCLE RESPIRATOR

Werner Mascher; Stefan Zloczysti; Bernd Woicke, and Klaus Haertle, all of Berlin, Fed. Rep. of Germany, assignors to Auergesellschaft GmbH, Berlin, Fed. Rep. of Germany

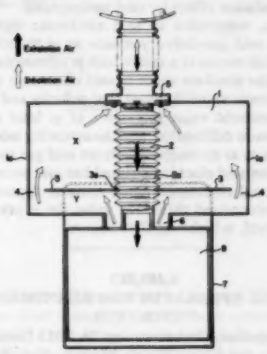
Filed May 20, 1982, Ser. No. 380,217

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3111795

Int. Cl.³ A62B *7/00*

U.S. Cl. 128—202.26 **9 Claims**

1. A closed cycle respirator including a breathing bag having upper and lower open ends, side walls and front and back walls, means for adapting said breathing bag to be worn on ones chest, a canister containing a chemical that binds carbon dioxide and water vapor and liberates oxygen to flow regenerated respiratory air up into said bag, means for fluidically connecting said canister to said lower open end of said bag and means for connecting the upper open end of said bag to a user for breathing, the improvement comprising a distributor mem-



ber secured within said bag to said front and back walls and extending generally in a direction transverse to said upper and lower ends and thereby vertically dividing said breathing bag into superimposed upper and lower chambers, said distributor member being spaced from at least one of said side walls to laterally guide regenerated respiratory air flowing up from said canister into said breathing bag toward said side walls.

4,459,982

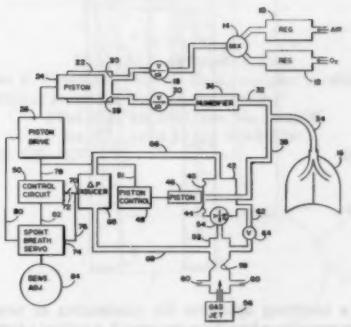
SERVO-CONTROLLED DEMAND REGULATOR FOR RESPIRATORY VENTILATOR

Stanley E. Fry, Riverside, Calif., assignor to Bear Medical Systems, Inc., Calif.

Filed Sep. 13, 1982, Ser. No. 417,621

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—204.23 **16 Claims**



1. A respiratory ventilator, of the type having breathable gas supply means, exhalation valving means, conduit means adapted for transmitting breathable gas to a patient during inhalation and for transmitting exhaled gas from said patient to said exhalation valving means, and gas-delivery means for alternately receiving gas from said gas supply means during exhalation and delivering said received gas to said conduit means during inhalation, wherein the improvement comprises:

first means for supplying a reference pressure;

second means, receptive to said reference pressure and the

pressure in said conduit means, for producing an electronic signal having a value indicative of the pressure differential between said first means and said conduit means, said electronic signal having a first polarity when the pressure in said conduit means is less than said reference pressure in response to an inhalation effort by said patient, and a second polarity when the pressure in said conduit means exceeds said reference pressure in response to an exhalation effort by said patient; and

third means, responsive to said electronic signal, for (a) actuating said gas-delivery means so as to deliver gas to said conduit means at a rate which is substantially proportional to the absolute value of said electronic signal when said electronic signal has said first polarity and a predetermined threshold value indicative of at least a threshold level pressure differential, and (b) actuating said gas-delivery means so as to receive gas from said gas supply means either when said electronic signal has said second polarity or when said electronic signal remains approximately at said predetermined threshold value for a predetermined time interval, whichever first occurs.

4,459,983

BREATHING APPARATUS FOR REANIMATION OF NEWBORNS

Christian Beyreuther, Rechnerstrasse 26, 8013 Haar, Fed. Rep. of Germany, and Klaus Riegel, Munich, Fed. Rep. of Germany, assignors to Christian Beyreuther, Haar, Fed. Rep. of Germany

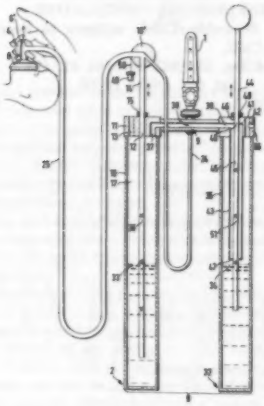
PCT No. PCT/EP80/00062, 371 Date Mar. 23, 1981, 102(e) Date Mar. 23, 1981, PCT Pub. No. WO81/00212, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 23, 1980, Ser. No. 247,300

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1979, 2929996; Jul. 21, 1980, 3027614

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—205.24 **17 Claims**



1. In a breathing apparatus for reanimation of newborn infants, comprising a breathing gas source, a patient adaptor an an inhalation valve assembly, said inhalation valve assembly comprising a first water column tube having an open upper end, first cover means mounted over said open upper end of said first water column tube and including a passageway communicating the interior of said first water column tube to atmosphere, a first riser tube slidably and adjustably mounted through said first cover means, said first riser tube having a first end adapted to be located within said first water column tube below the level of water therein and an opposite second end extending exteriorly of said first water column tube, a T-connector element, said second end of said first riser tube being connected to a first leg of said T-connector element, said patient adaptor including first, second and third ports, said first port including means for providing an oronasal flow of breathing gas to a patient, said second port comprising a closable opening for providing free exhalation to the atmosphere, a breathing hose connected between said third port and a second leg of said T-connector, conduit means connected between said breathing gas source and a third leg of said T-connector, regulator means associated with said breathing gas source for adjusting the quantity of the breathing gas source; the maximum immersion depth of the first riser tube determining the maximum inspiratory breathing pressure; the improvement comprising a second water column tube connectable in series with said first water column tube, said second water column tube having an open upper end, said cover means mounted over said open upper end of said second water column tube and including a passageway communicating the interior of said second water column tube to atmosphere, a second riser tube slidably and adjustably mounted through said second cover means, said second water column tube having a first end adapted to be located within said second water column tube below the level of water therein and an oppositely closed second end extending exteriorly thereof, said second riser tube further including a gas inlet port located intermediate the ends thereof, rigid connecting conduit means connected to said first and second cover means and providing a sealed gas flow path between the interior of said first water column tube and said gas inlet port of said second riser tube, means for selectively occluding the passageway in said first cover means, whereby said riser tubes of said water column tubes being independently adjustable and, by occluding the passageway in said first cover means, the integration of the first and second water column tubes provides a variable and controllable inspiratoric breathing pressure.

4,459,984

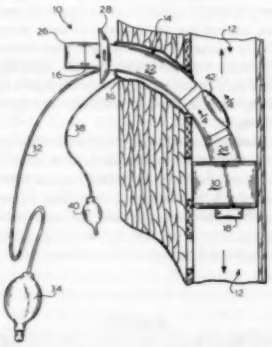
SPEAKING TRACHEOSTOMY TUBE

Kenneth B. Liegner, 315 Bear Ridge Rd., Pleasantville, N.Y. 10570

Filed Sep. 15, 1982, Ser. No. 418,407

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—207.15 **6 Claims**



1. A tracheostomy tube for partial insertion into the trachea of a human for the purpose of providing an airway from outside of the human's body, directly into the trachea, which comprises;

a curved cannula having

(a) a first open end;

(b) a second open end;

(c) a cannula body between and joining the first and second open ends;

(d) a lumen providing open communication between the first and second open ends; said cannula body (c) having

(i) a stoma zone adjacent the first open end; and

(ii) a trachea zone adjacent the second open end; said body being adapted by size and configuration to be inserted and positioned in a stoma sited in the neck of the human so that the first end is outside of the human's body, the stoma zone of the body is within said stoma, the trachea zone and the second end of the body are in said trachea; and

(e) an aperture in the trachea zone of the cannula body, providing open communication between the cannula lumen and the trachea at a point between the second open end and the stoma zone of the cannula body;

(f) means between the second end and the aperture, connected to the trachea zone of the cannula body, for forming a gas seal between the cannula body and the trachea walls when the cannula is positioned in said trachea; and

(g) valve means associated with said aperture, for permitting only one-way gaseous flow from said cannula lumen through the aperture during all phases of ventillation, while preventing debris from entering the cannula lumen via the aperture.

4,459,985

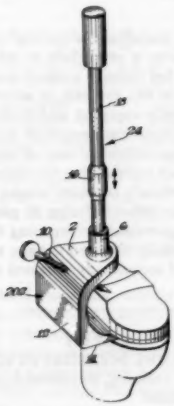
TIBIAL PROSTHESIS EXTRACTOR AND METHOD FOR EXTRACTING A TIBIAL IMPLANT

William F. McKay, Towaco, and Peter B. Van Syckle, Rutherford, both of N.J., assignors to Howmedica Inc., New York, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,335

Int. Cl.³ A61B *17/00, 17/18*

U.S. Cl. 128—303 R **5 Claims**



1. An extractor for dislodging an implanted tibial prosthesis having a tibial tray and stem,

said device comprising substantially parallel upper and lower member joined by a yoke at one end thereof,

said members being sufficiently spaced by said yoke to admit said tibial tray therebetween,

said lower member comprising a pair of forked blades for insertion between said tray and the proximal end of the tibia, straddling said stem,

and said upper member being adapted to receive means for applying upward dislodging force to said tray in substantially axial alignment with said stem to extract said prosthesis from said tibia.

4,459,986

SURGICAL LASER SYSTEM

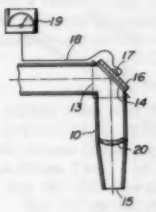
Kouichi Karaki, Hachioji, Japan, assignor to Olympus Optical Co. Ltd., Japan

Filed Feb. 9, 1982, Ser. No. 347,298

Claims priority, application Japan, Feb. 16, 1981, 56-20226

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.1 **11 Claims**



1. An apparatus for measuring an amount of energy in an output from a laser beam in a surgical laser system, including a laser light source and a light guide, the light guide having a plurality of tubes rotatably coupled together at portions occurring between successive tubes and a plurality of reflecting mirrors arranged at the rotatably coupled portions occurring between successive tubes, said light guide transmitting a laser beam emitted from the laser light source toward an operating site, comprising;

transmission means, provided on a last reflecting mirror arranged at a distal end of the light guide, for transmitting a very small part of the laser beam through the last reflecting mirror;

receiving means including a heat sink located on a rear surface of the last reflecting mirror for receiving the very small part of the laser beam transmitted through the last reflecting mirror; and

measurement means including a temperature measuring element for measuring a temperature of the heat sink.

4,459,987

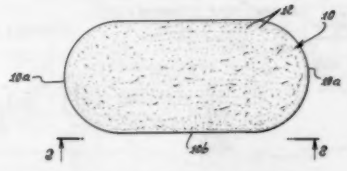
FLEXIBLE ABRASIVE PAD

William E. Pangburn, Ventura, Calif., assignor to William W. Haefliger, Pasadena, Calif., a part interest

Filed Mar. 10, 1982, Ser. No. 356,830

Int. Cl.³ A61B *17/00;* B24B *3/46*

U.S. Cl. 128—355 **30 Claims**



1. A flexible cosmetic abrasive sheet comprising

(a) a tough, flexible sheet of silicone polymer,

(b) abrasive particulate carried by and protruding from at least one side of the sheet and exposed for rubbing contact with human skin or other work during use of the sheet,

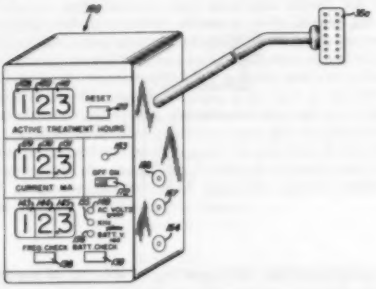
(c) said sheet being stretchable, and being formed from a layer of initially incompletely cured silicone polymer with which said particulate has been combined to adhere to the sheet, the sheet then allowed to cure.

4,459,988

ELECTRICAL STIMULATING APPARATUS

Richard S. Dugot, New York, N.Y., assignor to Biolectron, Inc., Hackensack, N.J.

Filed Feb. 22, 1982, Ser. No. 350,440
Int. Cl.³ A61N 1/20
U.S. Cl. 128—419 F 12 Claims



1. Portable, light weight, self-contained apparatus for treating a living body comprising

a casing,

pulse generator means in the casing providing pulses of given periodicity,

signal generator means in said casing for generating a periodically varying treatment signal of ultrasonic frequency and predetermined energy value,

means for causing said signal generator means to generate said treatment signal in timed relation to said pulses,

electrode means connected to said signal generator means for applying said treatment signal non-invasively to a living body to be treated, and

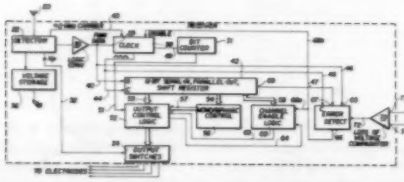
timing register means in said casing responsive to said pulses and rendered operative with said treatment signal generator means for storing a retrievable representation of the accumulated time of application of said treatment signal to said body.

4,459,989

NON-INVASIVE MULTIPROGRAMMABLE TISSUE STIMULATOR AND METHODS FOR USE

William N. Borkan, North Miami, Fla., assignor to Neuromed, Inc., Fort Lauderdale, Fla.

Filed Jun. 30, 1981, Ser. No. 278,991
Int. Cl.³ A61N 1/36
U.S. Cl. 128—421 37 Claims



1. An electronic tissue stimulator system, comprising:

at least three electrodes to be implanted adjacent tissue to be stimulated in a patient;

transmitting means for transmitting stimulation pulses to stimulate said electrodes and programming data to define which of said electrodes are to be stimulated and the electrical polarity of said electrodes relative to one another; and

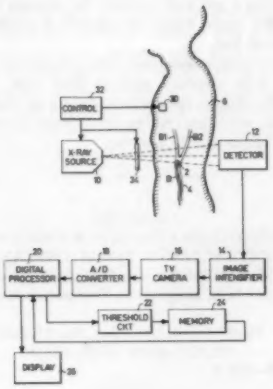
receiving means to be surgically implanted within said patient for receiving said stimulation pulses and said programming data, and for delivering said stimulation pulses to said electrodes in said electrical polarity as defined by said programming data.

4,459,990

RADIOGRAPHIC METHOD AND APPARATUS FOR THE VISUALIZATION OF THE INTERIOR OF A BODY PARTICULARLY USEFUL FOR THE VISUALIZATION OF A SUBJECT'S CIRCULATORY SYSTEM

Daniel I. Barnea, Tel-Aviv, Israel, assignor to Elscint, Incorporated, Boston, Mass.

Filed Jun. 26, 1982, Ser. No. 342,891
Int. Cl.³ A61B 6/00
U.S. Cl. 128—656 33 Claims



1. A method for visualizing a portion of the circulatory system of a subject by a procedure in which a catheter is introduced into and fed through a blood vessel of the subject while the progress of the catheter is observed in a display obtained by sequentially exposing said portion to penetrating radiation to obtain sequential images of the catheter and by sequentially displaying individual ones of the obtained images, the image last obtained representing the current position of the catheter and the previously obtained images representing previous positions of the catheter during its progress to the current position, the improvement comprising the steps of:

storing the sequentially obtained images; and

superimposing said sequentially obtained images in a single display.

4,459,991

BLOOD PRESSURE MEASURING EQUIPMENT

Rudolf A. Hatschek, Fribourg, Switzerland, assignor to Asulab A.G., Biel, Switzerland

Filed Feb. 12, 1981, Ser. No. 235,564
Claims priority, application Switzerland, Feb. 18, 1980, 1296/80
Int. Cl.³ A61B 5/02
U.S. Cl. 128—681 10 Claims

1. Blood pressure measuring equipment comprising

measuring means attachable to a person, said measuring means comprising

a microphone for detection of blood flow generated tones, and

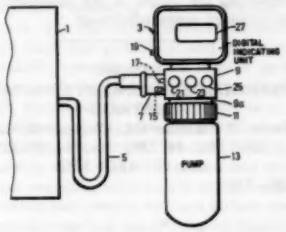
means defining a chamber deformable by a fluid,

pump means for pumping fluid into said chamber for deformation thereof,

valve means for controlling fluid outflow from said chamber,

a pressure sensor responsive to fluid pressure in said chamber to generate an electrical signal indicative of said pressure,

differentiating means electrically connected to said sensor to provide an electrical signal indicative of the rate of change in said pressure; and



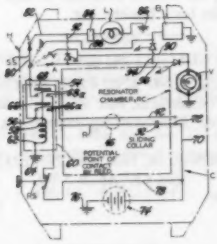
means responsive to said rate indicative signal for causing said valve means to close when said rate indicative signal represents an increase in the pressure at least during pumping of fluid into said chamber at a rate above a predetermined upper value exceeding a value normally creatable by the blood pressure of a person to which the cuff is attached.

4,459,992

ARTERIAL PULSE RATE MONITOR AND STRESS WARNING DEVICE

Marion V. Gwyn, 8035 Coolidge, Centerline, Mich. 48015

Filed Nov. 15, 1982, Ser. No. 441,473
Int. Cl.³ A61B 5/02
U.S. Cl. 128—687 **12 Claims**



1. A portable blood pulse rate monitor and stress warning device for warning of imminent heart trouble to the user of the device, said device comprising:

case means for housing components of the device, said case means including a case member having wall means defining a dual purpose combined resonator-amplifier chamber in the form of:

a shallow horn or hopper-shaped pulse-amplifying chamber having a closed-off large end and a smaller oppositely disposed narrowed and elongated open end;

a membrane stretched across and overlaying said latter chamber at its large end to close off same, said membrane adapted to lay against a given pulse area and to amplify the attendant pulse thereat;

a resonator in the form of a thin linear reed supported by and within said case member in a manner extending medially across said chamber adjacent said narrowed open end thereof;

said resonator reed being of a material characterized by natural sympathetic vibration capability having a predeterminable frequency of response when vibrating;

means for varying the frequency of response of said reed;

electric circuit means with operatively connected battery power means therefore, said circuit means comprising integrated warning alarm means and a circuit portion within said case member adapted to be energized by pulse-amplified resonator contact upon the attaining of a predetermined high level of resonator reed vibration or frequency response which corresponds to a predeterminable dangerously high level of pulse rate; and

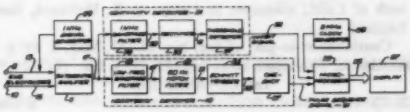
said device having a variable range of pulse rates calibrated therewithin for selection according to different needs of different wearer's of said device.

4,459,993

CONTINUITY DETECTOR FOR HEARTBEAT RATE MEASURING SYSTEM

Richard L. Foreman, Lemon Grove, Calif., assignor to Camino Laboratories, San Diego, Calif.

Filed Aug. 20, 1982, Ser. No. 410,043
Int. Cl.³ A61B 5/04
U.S. Cl. 128—706 **18 Claims**



1. Apparatus for monitoring a succession of heartbeats and estimating heart rate, comprising:

first and second electrodes adapted to contact a patient and transmit an EKG signal indicative of heartbeat activity;

heart rate means, connected to the first and second electrodes, for monitoring the EKG signal and estimating heart rate;

means for coupling a prescribed continuity signal to the first electrode, for transmission through the patient to the second electrode;

means for detecting the presence of the continuity signal at the second electrode and producing an inhibit signal whenever the continuity signal is not detected; and

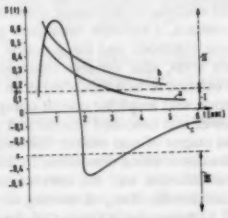
means for inhibiting the heart rate means in response to the inhibit signal.

4,459,994

METHOD FOR ASSURING VALID MEASURED VALUES OF BREATH ALCOHOL CONCENTRATION

Andreas Siemeyer, Karlsruhe, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,142
Int. Cl.³ A61B 5/00
U.S. Cl. 128—719 **4 Claims**



1. A method for ascertaining valid breath samples for determining the blood alcohol concentration BAC by analysis of the

alcohol concentration in alveolar expiration air, characterized in the steps of:

(a) measuring the expiration volume V(t) per unit of time;

(b) measuring the breath alcohol concentration BrAC(t);

(c) calculating therefrom the gradient S(t) of the expiration concentration, according to the formula

$$S(t) = \frac{d\,BrAC(t)}{d\,V(t)} \times \frac{V(t)}{BrAC(t)}\text{; and}$$

(d) making use of the measured value of BrAC for further evaluation of blood alcohol BAC, if S(t) lies between a positive threshold value S+ and a negative threshold value S−, S+ being present when S(t) approximates its final value, according to alveolar equilibrium concentration, and S− being present when S(t) is less than or equal to 0.

4,459,995

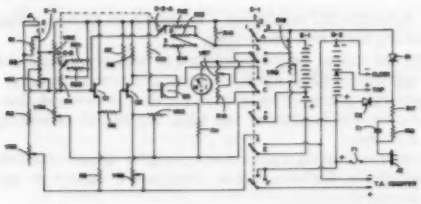
INDICATING DEVICE FOR USE IN A DEVICE FOR MEASURING AND INDICATING CHANGES IN RESISTANCE OF A LIVING BODY

Ron Conners, Los Angeles, and John McCormick, Grass Valley, both of Calif., assignors to Lafayette R. Hubbard, Sussex, England

Continuation-in-part of Ser. No. 18,727, Mar. 8, 1979, abandoned. This application Sep. 22, 1981, Ser. No. 304,594

Int. Cl.³ A61B *5/05*

U.S. Cl. 128—734 **6 Claims**



1. A device for indicating changes in resistance of a living body comprising a bridge network having on one side therof a first resistance arm connected in series with a second resistance arm, and on another side thereof a first voltage arm connected in series with a second voltage arm, there being connected in series between the junction of the first and second resistance arms and the first and second voltage arms a transistorized amplifier circuit and current indicating means showing the changes in balance of said bridge network, two electrodes adapted to be connected to a living body, one of said electrodes being electrically connected to a terminal of one of said resistance arms, whereby said living body is adapted to be connected across said one of the resistance arms, a range control device comprising a potentiometer connected in parallel with said first voltage arm, said potentiometer having a sliding contact electrically connected to a terminal of said first voltage arm, the other of said electrodes being electrically connected to said sliding contact, a variable resistance electrically connected to said one electrode and the junction of the first and second resistance arms, said variable resistance being adjustable to enable a balance to be established in an initial setting of the bridge network, said amplifier circuit comprising a transistor emitter follower and cascaded second and third transistors connected to the output of said emitter follower, the collector of said second transistor being connected to the emitter of said transistor emitter follower and the current indicating means comprising an uncritically damped moving coil meter electrically connected between the collector of the third transistor and the first voltage arm, said uncritically damped moving coil meter consisting of an iron cylinder pivotally supporting a metal frame with zero conductivity having a meter coil wound thereon and an indicator needle fixed to said frame, a sensitivity control branch connected across the second voltage arm and comprising two series-connected resistors, at least one of which is variable, the junction of said series-connected resistors being connected to the emitter of said second transistor, said electrodes being connected directly to the base of the transistor emitter follower, and a resistive negative feedback branch connecting the output of the amplifier circuit to the base of the transistor emitter follower.

4,459,996

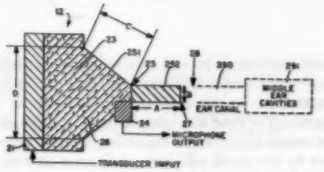
EAR PATHOLOGY DIAGNOSIS APPARATUS AND METHOD

John H. Teele, 22 Ruthellen Rd., Chelmsford, Mass. 01824

Filed Mar. 16, 1982, Ser. No. 358,831

Int. Cl.³ A61B *5/12*

U.S. Cl. 128—746 **15 Claims**



1. A method for diagnosis of pathological ear conditions, such method comprising:

(a) determining, with the ear at atmospheric pressure and at least partially open to air in the atmosphere, a quantity related to the complex acoustic impedance of the ear and comprising the vector sum of incident and reflected acoustic signals propagating in the ear canal for at least one frequency in excess of approximately 1 kHz;

(b) comparing the results obtained in step (a) with the expected results for a healthy ear.

4,459,997

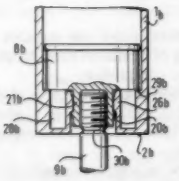
BLOOD EXTRACTING AND CENTRIFUGING DEVICE

Walter Sarstedt, Nümbrecht, Fed. Rep. of Germany, assignor to Walter Sarstedt Kunststoff-Spritzgusswerk, Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,827

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—764 **16 Claims**



1. A blood extracting and centrifuging device comprising a generally cylindrical body having front and rear ends, said front end being adapted to receive a removable cannula; a piston sealingly movable within said cylindrical body; in a forward direction toward said front end and in a rearward direction toward said rear end; an annular sleeve attached to said rear end of said cylindrical body, said annular sleeve having a central bore; a piston rod attached to said piston, said piston rod having a front end portion adjacent said piston and extending through said bore for moving said piston from an advanced position adjacent said front end to a retracted posi-

tion adjacent said rear end, whereby to generate a vacuum in said cylindrical body for extracting blood via an attached cannula, means for separating at least a major portion of said piston rod from said piston after movement of the same to said retracted position; and securing means for retaining said piston in said retracted position even after removal of at least said major portion of said piston rod; wherein said securing means comprises a radially outwardly directed, annular, retaining projection on one of a rearwardly directed extension of said piston and said front end portion of said piston rod, and a cooperating, radially inwardly directed, annular lip formed on said annular sleeve; wherein said retaining projection has a first surface, which tapers substantially conically in a rearward direction away from a portion of said projection having an external diameter, and a second, forwardly facing, substantially flat, retaining surface in front of said first surface, said retaining surface extending substantially at right angles to said piston rod; wherein said annular lip has a surface complementary to said retaining surface, has an internal diameter smaller than said external diameter, and is formed on said annular sleeve at a position axially spaced apart from the position at which said sleeve is attached to said rear end of said cylindrical body; wherein said sleeve is provided, at least at its forwardly facing end, with a lead-in taper to facilitate resilient dilation of said sleeve by said first surface on retraction of said piston, whereby to enable said annular lip to snap resiliently into retaining engagement forwardly of said retaining surface on movement of said piston into said retracted position; and wherein no part of said piston or piston rod projects beyond said rear end after separation of at least said major portion of said piston rod from said piston, whereby pressure is not exerted on the piston in a forward direction when the cylindrical body is inserted in a centrifuge.

4,459,998

MANUFACTURE OF CIGARETTES

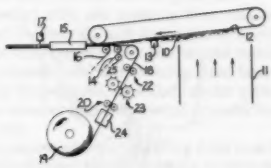
Francis A. M. Labbe, Neuilly-sur-Seine, France, and John R. Nowers, London, England, assignors to Molins Limited, London, England

Filed Feb. 18, 1981, Ser. No. 235,601

Claims priority, application United Kingdom, Feb. 20, 1980, 8005760

Int. Cl.³ A24C *5/14*

U.S. Cl. 131—62 **7 Claims**



1. A method of making cigarettes in which a basic filler stream is formed from particles of tobacco or artificial tobacco or from a combination of both materials, a web of reconstituted tobacco and a continuous paper wrapper are each folded around the filler stream, with the paper wrapper on the outside to form a continuous cigarette rod which is then cut into individual rods of predetermined length, where the filler stream is deposited on the web after the web is fed onto the paper wrapper, and in which adhesive is applied along the web or wrapper to cause the web to adhere to the wrapper before they are both applied to the filler stream.

4,459,999

CIGARETTE MAKER FEEDER

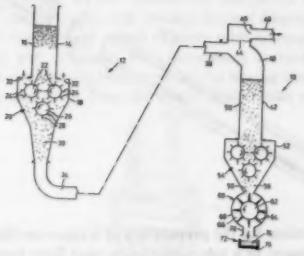
Warren A. Brackmann, Cooksville, and Karel Hrboticky, Etobicoke, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Don Mills, Canada

Filed Oct. 22, 1981, Ser. No. 313,797

Claims priority, application United Kingdom, Oct. 23, 1980, 8034240

Int. Cl.³ A24B *3/06*; A24C *5/39*

U.S. Cl. 131—109 R **9 Claims**



1. A method for providing a feed of tobacco for a cigarette making machine, which comprises:

feeding cut tobacco downwardly from a source of unopened cut tobacco between counterrotating metering rollers to form a metered flow of cut tobacco particles,

contacting said metered flow with mechanical opening means to open said metered flow and separate the tobacco particles in said metered flow one from another,

feeding all said separated tobacco particles into a flowing air stream passing through an enclosed tobacco feed conduit extending continuously from said source of unopened cut tobacco to a second location,

conveying by said flowing air stream all said fed cut tobacco particles in substantially separated condition to a reservoir at said second location,

separating said conveyed tobacco particles from said air stream at said second location,

collecting said separated tobacco particles in said reservoir, and

metering tobacco particles from said reservoir to form said feed.

4,460,000

VACUUM AND GAS EXPANSION OF TOBACCO

Ira H. Steinberg, East Brunswick, N.J., assignor to The BOC Group, Inc., Montvale, N.J.

Filed Jun. 14, 1982, Ser. No. 387,912

Int. Cl.³ A24B *3/18*

U.S. Cl. 131—296 **10 Claims**

1. A method for expanding tobacco comprising the steps of:

cooling said tobacco to a temperature of approximately 30° F. or less;

subjecting said cooled tobacco to a vacuum pressure of 25 mm Hg or less in a vessel;

introducing CO_2 gas into said vessel to increase pressure therein to approximately, but not substantially greater than, atmospheric pressure such that said cooled tobacco is impregnated with said CO_2 gas; and

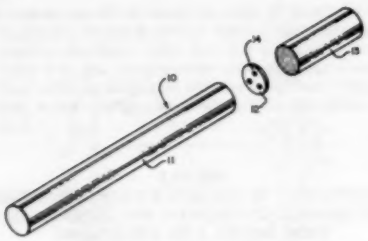
subjecting said cooled, CO_2 impregnated tobacco to conditions such that said CO_2 impregnated in said tobacco is removed therefrom and said tobacco is expanded.

4,460,001

PROCESS FOR PREPARING COMPOUND FILTER

Colin L. Browne, Clover, S.C.; Charles H. Keith, and Peter J. Bohlander, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 185,058, Sep. 8, 1980, abandoned. This application Aug. 23, 1982, Ser. No. 410,272
Int. Cl.³ A24D 3/04
U.S. Cl. 131—338 3 Claims



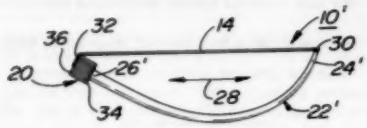
1. A process for the preparation of a cigarette filter suitable for attachment to a tobacco column, said filter having an initially totally encapsulated pressure drop of at least 90 mm. H_2O, said process comprising coating the upstream end of a filter rod with a gas impervious coating and then forming one or more apertures in said coating to provide a smoke passageway having a total cross-sectional area of from 1.9 to 2.5 square milimeters, whereby on smoking, tar buildup downstream of said insert produces increasing pressure drop and substantially constant tar and nicotine delivery as the cigarette is smoked.

4,460,002

DISPOSABLE DENTAL FLOSS APPLICATOR SYSTEM

Douglas C. Burdette, Jr., 505 Aldino-Stepney Rd., Aberdeen, Md. 21001

Filed Dec. 18, 1981, Ser. No. 332,001
Int. Cl.³ A61C 15/00
U.S. Cl. 132—91 8 Claims



1. A disposable dental floss applicator system including:

(a) a flexible elongate member having opposing ends, said flexible elongate member being formed in an arcuate contour, said flexible elongate member being substantially circular in cross-sectional contour having a diameter varying in a substantially linearly monotonically decreasing manner from one of said opposing ends to the other of said opposing ends, said flexible elongate member being rod-like in contour substantially throughout an extended length of said flexible elongate member; and,

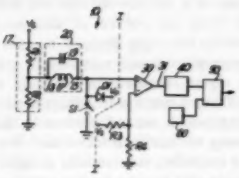
(b) a handle member fixedly fastened to one of said opposing ends, said dental floss being fixedly secured to said opposing ends in tensioned relation therebetween to form said arcuate contour, said handle member adapted to be gripped between the fingers of a user for insertion of said disposable dental floss applicator system at least partially into the mouth of said user, said handle member including a cylindrical contour having a diameter substantially greater than a diameter of said flexible elongate member.

4,460,003

COIN PRESENCE SENSING APPARATUS

Elwood E. Barnes, Parkesburg, and Thomas L. Flack, Philadelphia, both of Pa., assignors to Mars, Inc., McLean, Va.

Filed Aug. 21, 1981, Ser. No. 294,997
Int. Cl.³ G07F 3/02
U.S. Cl. 133—1 R 23 Claims



1. A coin presence sensing apparatus for sensing the presence or absence of coins in a coin passageway in a coin operated vending mechanism comprising,

a first ringing type electronic oscillator circuit comprising a first inductor, said electronic oscillator circuit producing an output signal indicative of coin presence or absence in the proximity of the first inductor,

the first inductor comprising a dumbbell shaped ferromagnetic core having a central core piece integrally connecting two end pieces having a larger circumference than the central core piece and a coil wound on the central core piece and between the two end pieces, the first inductor having one of its two end pieces located adjacent a first portion of the coin passageway and producing a magnetic field projecting from said one end piece into the coin passageway when current flows through the coil, and

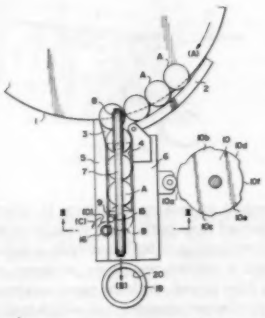
circuit means connected to the output signal of said electronic oscillator circuit for determining whether a coin is present or absent in a portion of the coin passageway in the proximity of the first inductor.

4,460,004

APPARATUS FOR DETECTING DIFFERENT KINDS OF COINS FOR USE IN A COIN HANDLING MACHINE

Katusuke Furuya, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd.

Filed Feb. 16, 1982, Ser. No. 349,154
Claims priority, application Japan, Feb. 18, 1981, 56-21965[U]
Int. Cl.³ G07D 9/00
U.S. Cl. 133—8 R 4 Claims



1. An apparatus for detecting different kinds of coins, said apparatus for use in a coin handling machine, said apparatus comprises:

a coin selecting groove with a fixed selecting plate and a movable selecting plate,

a first cam controlling said movable selecting plate for selecting the width of the coin selecting groove in accordance with the size of coins to be handled,

a detection coil positioned between said fixed selecting plate and said movable selecting plate passing a magnetic flux across the coins selected and transferred into the coin selecting groove and picking up a variation in magnetic flux and generating a level signal,

a plurality of coin kind selecting cams actuated simaltaneously with said first cam,

a coin kind setting switch controlled by the coin kind selecting cams for setting detection levels corresponding to the material of the particular kind of coins to be handled,

a control circuit comparing the detection levels set by the coin kind setting switch with the level signal detected by the detection coil, and

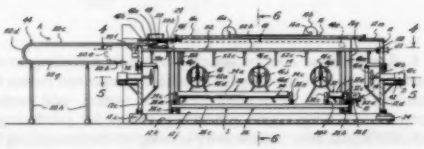
a stop positioned adjacent to said coin selecting groove actuated to stop the transfer of coins into said selecting groove upon indication by said control circuit of a level signal other than said level signal set by said coin kind setting switch.

4,460,005

WASHING APPARATUS FOR TUBULAR MEMBERS

Edward F. Rodger, Houston, Tex., assignor to The C. A. Rubio Company, Houston, Tex.

Filed Apr. 1, 1981, Ser. No. 250,030
Int. Cl.³ B08B 9/02
U.S. Cl. 134—104 **18 Claims**



1. A washing apparatus for washing a soiled tubular member in a cleaning fluid, the cleaning fluid and soil forming sludge within the washing apparatus, comprising:

a cleaning fluid tank for containing cleaning fluid therein;

support means with said cleaning fluid tank for supporting the tubular member between a first position wherein the tubular member is not within said cleaning fluid tank and a second position wherein the tubular member is disposed substantially within the cleaning fluid in said cleaning fluid tank, said support means including a frame member for receiving the tubular member for movement thereof between said first and second positions;

moving means with said cleaning fluid tank and said frame member for moving said frame member and the tubular member between said first and second positions;

directing means with said cleaning fluid tank for directing cleaning fluid against the soiled tubular member when the tubular member is in said second position for washing the same; and,

collection means with said cleaning fluid tank for collecting the sludge formed during washing of the tubular member.

4,460,006

FREEZE PROTECTION VALVE

Lawrence A. Kolze, Bensenville, assignor to Eaton Corporation, Cleveland, Ohio

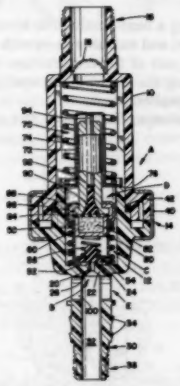
Filed Jan. 19, 1982, Ser. No. 340,605
Int. Cl.³ F16K 17/00; G05D 23/02
U.S. Cl. 137—62 **20 Claims**

1. A freeze protection valve comprising:

a valve housing having a first wall portion defining an inlet aperture therethrough and a second wall portion defining a freeze drain outlet therethrough, the first and second wall portions defining a fluid receiving reservoir therebetween;

a freeze drain outlet valving means for selectively opening and closing the freeze drain outlet, the valving means including a valving element disposed completely within the valve housing fluid receiving reservoir adjacent the second wall portion for selectively engaging the freeze drain outlet in a sealing relationship to control the flow of fluid therethrough; and,

a thermal sensing assembly disposed completely upstream of said drain outlet and including a thermal element cup disposed in the valve housing fluid receiving reservoir closely adjacent to and operatively connected with the valving element, a thermal sensing element disposed in the thermal element cup which expands with increasing temperature and contracts with decreasing temperature, a thermal element cup biasing means for biasing the thermal element cup away from the freeze drain outlet upstream



toward the inlet aperture and deeper into the fluid receiving reservoir, the thermal element biasing means being disposed completely within the fluid receiving reservoir, a piston means operatively connected at one end with the thermal element, an over travel protection spring means operatively connected between the piston means and the valve housing, the over travel protection spring means having a greater spring force than the thermal element cup biasing means such that as the thermal element expands, the thermal sensing assembly urges the valving element toward the closed position, as the thermal element expands further, the over travel protection spring is compressed, and as the thermal element contracts, the thermal element cup biasing means biases the thermal element cup and the valving element away from the freeze drain outlet toward the open position, whereby the freeze protection valve opens and closes in response to the temperature closely adjacent the freeze drain outlet.

4,460,007

VALVE MECHANISM

Fred L. Pirkle, Controls Consulting Company, R.D. 2, Box 353, Phoenixville, Pa. 19460

Filed Jan. 25, 1983, Ser. No. 460,927
Int. Cl.³ E03B 7/10; F16K 17/38
U.S. Cl. 137—79 **29 Claims**

1. A valve for use in draining a railroad locomotive cooling water system to prevent the system from freezing under low ambient temperature conditions comprising:

means providing a valve chamber connectable to the system, said valve chamber having a drain outlet;

a valve element cooperating with said drain outlet and mov-

able from a first position in which it closes the drain outlet to a second position in which the drain outlet is opened;

means connected to the valve element for urging the valve element toward its second position;

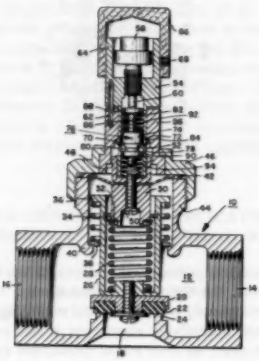
latch means connected to the valve element for holding the valve element in its first position and releasable to permit the valve element to move to its second position under the influence of the urging means;

a valve stem connected to the valve element and movable therewith as the valve element moves from its first position to its second position;

a temperature sensor connected to the valve stem and movable therewith, the sensor including a temperature sensing element at a location such that it is out of contact with the water in the valve chamber, and out of contact with the water in the system when the valve is connected to said system, and means responsive to the temperature sensing element for releasing the latch means when the temperature of the sensing element falls below a predetermined level;

means providing a heat-conductive housing, also carried by the valve stem and movable therewith surrounding at least a substantial part of the temperature sensing element and partly isolating the temperature sensing element from the ambient atmosphere; and

means for conducting heat from the system through the



valve stem to the heat-conductive housing when the valve chamber is connected to the system at a rate such that the valve is prevented from opening in response to low ambient temperatures while the water in the system is warm, yet responds rapidly to a drop in the ambient temperature when the water in the system is cool.

15. A valve mechanism comprising:

a valve body with at least two ports and a movable closure element arranged to control flow of a fluid from one of said ports to another of said ports, said closure element being movable along an axis between a first valve position in which flow from one of said ports to the other is shut off and a second position in which flow from one of said ports to the other is permitted;

an actuator having a body and an actuator element movable in relation to said actuator body;

neck means, secured to said valve body, having an internal passage extending along said axis, the actuator body being fixed to the neck means and the movable actuator element extending along said axis into the passage in the direction toward the valve element;

stem means connected to the valve element and extending into the passage in the direction toward the movable actuator element;

means for urging the stem means toward the actuator body whereby the valve element is urged toward said second valve position; and

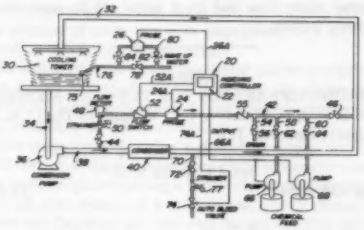
means engaged by and responsive to the movable actuator element for moving the closure element toward its first valve position and for latching the closure element in said first valve position by latching the stem means to the neck means, as the movable actuator element moves in the direction toward the valve element, and permitting continued movement of the movable actuator element in the same direction beyond the position in which latching first takes place.

4,460,008

INDEXING CONTROLLER APPARATUS FOR COOLING WATER TOWER SYSTEMS

Richard P. O'Leary, 331 Louella Ave., Wayne, Pa. 19087, and Robert V. Morris, 221 S. 14th, Muskogee, Okla. 74401

Filed Dec. 23, 1982, Ser. No. 452,672
Int. Cl.³ G05D *11/08*
U.S. Cl. 137—93 **15 Claims**



1. A solid state control system for use in a cooling tower water system having a supply of make-up water and means for enabling water to be drained from said system, said control system comprising signal generating means for producing a periodic signal, first conductivity sensing probe means coupled to said signal generating means and adapted for disposition in the cooling tower water to provide a first signal proportional to the conductivity of the tower water, second conductivity sensing probe means coupled to said signal generating means and adapted for dispostion in the make-up water supply to said cooling tower to provide a second signal proportional to the conductivity of the make-up water, display means for displaying system water conductivities, first and second selectively actuable calibration means for calibrating said display means to said first conductivity sensing probe means and said second conductivity sensing probe means, respectively, selector switch means for selectively providing signals produced by said controller system to said display means to display conductivity readings, third circuit means having first and second inputs, said first input being coupled to said second conductivity sensing probe for receipt of said second signal, said second input comprising an adjustable signal, said third circuit means subtracting said second signal from said first signal to produce a delta signal, said delta signal being coupled, via said selector switch means to said display means to display said delta signal, fourth circuit means connected to said third circuit means and including fourth selectively adjustable means for producing a product signal equal to the product of said delta signal and a value established by said fourth selectively adjustable means, fifth circuit means connected to said fourth circuit means and said selector switch means and having a pair of inputs and fifth selectively adjustable means for producing a fifth signal, said fifth signal serving as one of said inputs and said product signal serving as the other of said inputs, said fifth circuit means adding the input signals to produce an output signal, said output signal being coupled by said selector switch means to said display means to display said output signal, comparator means connected to said fifth circuit means for receipt of said output signal and also arranged for receipt of said first signal to compare said output signal to said first signal to produce a

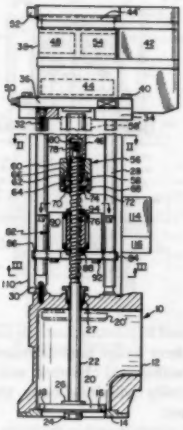
control signal responsive thereto, said control signal being connected to means in said cooling water tower system to cause water to drain therefrom.

4,460,009

VALVE STEM ACTUATOR

James R. Nanci, Pittsburgh, and James MacGregor, Claysville, both of Pa., assignors to Ralph A. Hiller Company, Pittsburgh, Pa.

Filed Sep. 7, 1982, Ser. No. 415,676
Int. Cl.³ F16K *31/122, 31/54*
U.S. Cl. 137—243.6 **18 Claims**



1. A valve stem actuator for a slurry valve or the like wherein the valve seat of the valve body is subject to encrustation of materials which inhibits proper seating of the valve disc on the valve seat and wherein the valve includes a longitudinally extending valve stem adapted for connection on the end opposite the valve disc, said actuator comprising:

(a) a support frame adapted to extend from said body;

(b) an operator mounted on said support frame including a cylinder having a piston with a piston rod for moving said valve stem linearly with respect to said body;

(c) means for connecting the piston rod to the valve stem;

(d) means mounted and linearly received on said support frame during the linear movement of said valve stem, for rotating said valve stem about its axis in either direction with respect to said valve body independently of said linear movement of said valve stem to dislodge accumulated crust to permit the valve disc to properly seat to prevent fluid flow through the valve.

4,460,010

STATION COMPRISING TWO OR MORE GAS BOTTLES FOR WELDING AND OTHER APPLICATIONS

Zivko Paravigna; Jack Boursaud, both of Genlis, and Christian Tassart, Brunoy, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Jan. 11, 1982, Ser. No. 338,246
Claims priority, application France, Jan. 12, 1981, 81 00362
Int. Cl.³ F16K *11/00*
U.S. Cl. 137—259 **5 Claims**

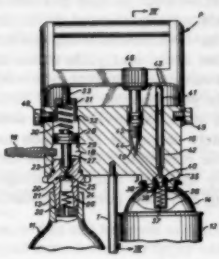
1. A portable gas supply station for carrying at least two gas bottles each having a respective opening at an end thereof, the station comprising:

a block having means for mounting the bottles to the block via their openings;

respective feed connectors each connecting the opening of the associated bottle to a respective passage in the block;

respective flow control means in each said passage for controlling flow of gas therethrough; and

a carrying handle movably mounted on the block and operative to act simultaneously on said control means, said



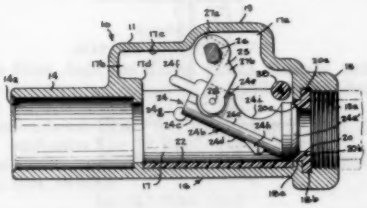
carrying handle being selectively movable from a stable carrying position in which it simultaneously closes all said control means, to at least one stable operative position in which it simultaneously opens said control means, and back to said transport position to simultaneously close said control means.

4,460,011

SANDBLASTING NOZZLE AND CONTROL ASSEMBLY

George H. Huber, Jr., 807 Moores La., New Castle, Del. 19720

Filed Jul. 5, 1983, Ser. No. 510,932
Int. Cl.³ F16L *58/10*; F16K *35/02*
U.S. Cl. 137—375 **20 Claims**



1. A control valve assembly to be disposed in immediately adjacent communication with a discharge nozzle of a sandblasting abrasive cleaning system or the like, comprising a valve housing defining an elongated valve chamber extending along a longitudinal center axis therethrough between opposite inlet and discharge ends of the housing and chamber, means for connecting the inlet end to a supply conduit for delivering an abrasive stream of pressurized fluid and sand to said valve chamber and for communicating said discharge end with the discharge nozzle, a bulge formation on said housing defining a side compartment laterally communicating with said valve chamber and having an end cavity adjacent said inlet end, valve seat means at the discharge end of the valve chamber having a circular passage concentric with said center axis communicating with the nozzle and encircled by a truncated conical seating surface, a pivot valve member supported for movement into and from said valve chamber having a generally cylindrical valve head formed about an axis of revolution coinciding with said center axis when located in closed position and providing a beveled surface to conform to and seat tightly against said seating surface to close said passage, the valve member including an elongated stem portion extending in said closed position from said valve head toward said end

cavity along a path inclined to said center axis and terminating in a tail formation at the stem end nearest said end cavity, an operating shaft journaled in said bulge formation, a handle for rotating the shaft, a linkage yoke member mounted at one end thereof on said shaft and connected at its other end to said stem portion at a location adjacent said tail formation for moving the valve member between an open position, and said closed position, and guide means positioned within the valve housing for maintaining the valve member along said inclined path until said valve member clears said guide means during an initial retraction of said valve member from the closed position to the open position, the yoke member and tail formation being located and shaped to tilt the valve member while concurrently moving it arcuately about the shaft upon handle and shaft rotation during the remaining retraction of the valve member substantially fully into said side compartment to the open position disposing said stem portion substantially parallel to said center axis.

4,460,012

CARTRIDGE-TYPE VALVE

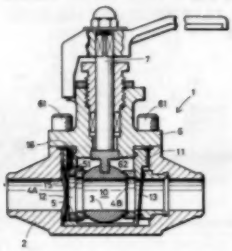
Noboru Koumi; Takeshi Nishitani, both of Yokohama; Kazuo Okayasu, and Yoshikazu Takamizawa, both of Tokyo, all of Japan, assignors to JGC Corporation and OKA Valve Mfg. Co., Ltd., both of Tokyo, Japan

Filed Feb. 20, 1981, Ser. No. 236,270

Claims priority, application Japan, Feb. 22, 1980, 55-21208; Jul. 16, 1980, 55-97023

Int. Cl.³ F16K *25/00*

U.S. Cl. 137—454.6 **1 Claim**



1. A cartridge-type ball valve in a pipeline carrying a toxic fluid comprising a valve body, a cartridge containing a valve ball and two valve ball seats, and a bonnet and a bonnet stem; the cartridge together with the bonnet being attachable to and detachable from the valve body as a complete unit; wherein the valve body is a box, attached to the pipeline, having an inner shape conforming to the outer shape of the cartridge;

wherein the cartridge consists of a vertically cylindrical case having a closed bottom, passageways through opposite sides thereof for the flowing fluid, and opposing valve ball seats fitted adjacent said passageways, said ball being held by the valve seats; a plane traversing one of the passageways of the cartridge is a tapered plane inclined toward the inside at the lower part; one of the valve ball seats is fixed to the cartridge case and the other is carried by an adjuster which is threadingly received in one of the passageways;

and where radial projections are provided at the lower part of the bonnet in positions symmetrical about the bonnet center; a groove engaging with the projections surrounds the inner surface of the cartridge; and passages for the projections are provided in positions at which the bonnet 90° turned from positions of the projections in the assembled valve.

4,460,013

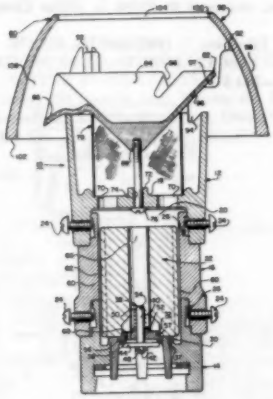
PRESSURE-VACUUM VENT

August Milo, Elizabeth, N.J., assignor to Universal Valve Co., Inc., Elizabeth, N.J.

Filed Dec. 17, 1981, Ser. No. 331,527

Int. Cl.³ F16K *17/18*

U.S. Cl. 137—493.4 **5 Claims**



1. A vent adapted to communicate an internal storage chamber with atmosphere under predetermined pressure and vacuum conditions within said chamber, said vent comprising:

a hollow, generally cylindrical body, the body downwardly defining a seat:

a poppet valve member within the body and resting upon the seat, the poppet valve member including first passage means in an upper wall thereof for communicating the storage chamber with atmosphere through the body at a predetermined vacuum level within said chamber;

second passsage means above the poppet valve member for venting the storage chamber to atmosphere through the body at a predetermined pressure level within said chamber, the outer periphery of the second passage means being defined by the body;

a movable seal member for said first passage means biased to prevent communication of said first passage means with atmosphere until said predetermined vacuum level within the chamber is reached; and

a non-deforming mass movably supported within the second passage means on the upper wall of the poppet valve member to urge the poppet valve member upon the seat for preventing the member from moving upwardly until the predetermined pressure build up in the storage chamber is reached, upward movement of said poppet valve member being adapted to vent the storage chamber to atmosphere through said second passage means.

4,460,014

NON-MIXING VALVE

Per E. Mases; Gunnar Lundquist, both of Malmö; Harry Nyqvist, Tullinge, and Torsten Carlsson, Södertälje, all of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Filed Apr. 20, 1981, Ser. No. 255,962

Claims priority, application Sweden, Apr. 24, 1980, 8003130

Int. Cl.³ F16K *11/20, 51/00*

U.S. Cl. 137—614.18 **17 Claims**

1. A double-seated valve, comprising:

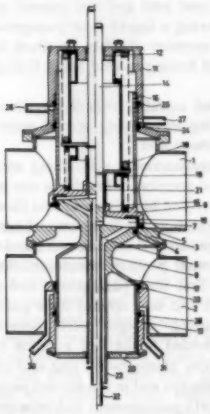
a valve housing having at least two conduit openings, a first valve seat and a second valve seat, first and second valve members each guided in the valve housing for movement relative to each other and the associated one of the first

and second valve seats between an open position and a closed position,

the first valve member being adapted for axially sealing in its closed position against the first valve seat,

the second valve member being adapted to abut during its opening movement against the first valve member and to move the latter during further opening movement into its open position,

a leak chamber defined between the valve members in both the closed and the open positions thereof, and a drain outlet permanently connecting the leak chamber to the outside of the valve,



the second valve member including a sliding body having radially oriented sealing means adapted to be sealingly received in an internal cylindrical seat wall of the second valve seat,

the first valve member having at its end proximate the second valve member an axial recess adapted to sealingly receive during opening of the valve a portion of the sliding body of the second valve member, and at least one of the valve members being shaped to substantially balance pressure forces and pressure hammers exerted thereon by the fluid.

4,460,015

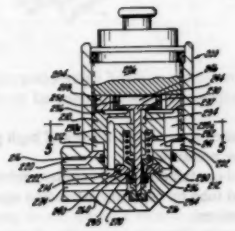
THREE-WAY CONTROL VALVE

David L. Burt, Grosse Pointe, and Gregory J. Krawczyk, Royal Oak, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 2, 1982, Ser. No. 364,814

Int. Cl.³ F16K *11/04*

U.S. Cl. 137—625.5 **13 Claims**



1. A three-way valve comprising:

a lower body member including a central axis, a first end, an annular first recess situated on said first end;

first passage means for communicating fluid to said first recess;

an axially located annular second recess partially extending through said lower body member, having an opening situated opposite to said first end and having a bottom seat situated opposite said opening, said second recess forming in cooperation with other elements of said lower body member a cylindrical axially located upraised boss, said second recess intersecting said first passage means, to provide fluid communication therebetween;

a central stepped bore having an enlarged bore terminating a said first end, and a narrow bore extending through said boss;

second passage means isolated from said first passage means and connected to said enlarged bore for transporting fluid from said enlarged bore out of said lower body member and wherein;

the surface area of first end between said first recess and said central stepped bore defines an upper valve seat;

a lower valve seat centrally located about said central axis and situated on the lower body member opposite from said first end; including a central opening therethrough;

a plunger having one end slidably and fluid tightly engaging the walls of said narrow bore, and having another end extending beyond said lower valve seat;

lower valve means attached to said another end of said plunger and movable therewith for seating upon said lower valve seat and for selectively opening and sealing said central opening; including a pre-load spacer situated about said plunger and extending through said central seat opening into said annular recess;

spring means adapted to fit about said boss for biasing said lower valve means apart from said lower body member;

upper valve means, situated above and movable with said plunger for selectively sealing upon said upper valve seat.

4,460,016

ROTARY SERVOVALVE

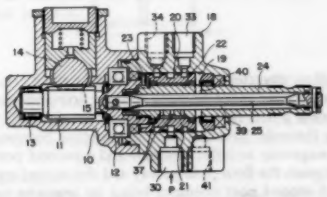
Kyosuke Haga, Anjo, and Tsuneo Tanaka, Okazaki, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Continuation-in-part of Ser. No. 268,380, May 29, 1981. This application Mar. 19, 1982, Ser. No. 359,860

Claims priority, application Japan, May 30, 1980, 55-73607; Mar. 27, 1981, 56-45826

Int. Cl.³ F15B *13/16*

U.S. Cl. 137—625.24 **7 Claims**



1. A rotary servovalve comprising:

a valve sleeve;

a rotor positioned in said valve sleeve for rotation relative thereto;

first, second and third port means provided in said valve sleeve and said rotor, said first, second and third port means communicating with a flow control portion defined by the internal surface of said valve sleeve together with the circumferential surface of said rotor;

a plurality of first axially extending lands formed on said internal surface of said valve sleeve;

a plurality a second axially extending lands formed on said circumferentail surface of said rotor and cooperating with said first axially extending lands to establish therebetween a plurality of orifices comprising said flow control portion, wherein said orifices control the flow of fluid from one of said first and second port means to said third port means and from said third port means to the other of said first and second port means; and

a plurality of chamfers formed on circumferential edges of one of said first and second axially extending lands, each of said chamfers being composed of first, second and third slopes disposed in turn from a circumferential end surface of an associated one of said lands towards an inland of said associated one of said lands;

said first slope having a first angle with respect to the circumferential direction of said associated one of said lands,

said second slope having a second angle larger than said first angle with respect to the circumferential direction of said associated one of said lands, and

said third slope having a third angle smaller than said first angle with respect to the circumferential direction of said associated one of said lands for smoothly connecting said second slope with a circumferential surface of said associated one of said lands.

4,460,017

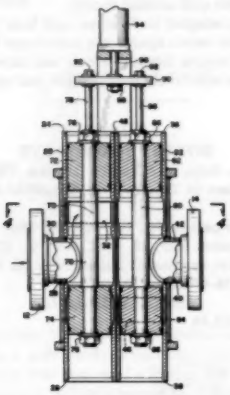
FOUR-WAY VALVE

Wendell E. Robb, 3204 S. 85 E. Ave., Tulsa, Okla. 74145

Filed Jun. 23, 1982, Ser. No. 391,006

Int. Cl.³ F17D *3/18*

U.S. Cl. 137—625.43 **3 Claims**



1. A flow diverter valve comprising:

a first tubular spool housing having first and second ends, having a first flow passageway in the sidewall intermediate the ends, having a first port opening between the flow passageway and the first end and a second port opening between the flow passageway and the second end, the first and second port openings being on opposite sides of the spool housing and 90° from said flow passageway;

a second tubular spool housing having first and second ends, having a second flow passageway in the sidewall intermediate the ends, having a first port opening between the flow passageway and the first end and a second port opening between the flow passageway and the second end, the first and second port openings being on opposite sides of the spool housing and 90° from the flow passageway, the first and second spools being assembled contiguous to each other in parallel arrangement with the contiguous exterior surfaces sealed and with said first and second flow passageways being opposite each other, forming a spool housing assembly, and wherein the first port opening of the first spool housing and the second port opening of the second spool housing are on the same side of the spool housing assembly and the second port opening of the first spool housing and the first port opening of the second spool housing being on the other side of the assembly;

means forming a first closed chamber on one side of the spool housing assembly encompassing said first spool housing first port and said second spool housing second port, and having a third flow passageway therein;

means forming a second closed chamber on the other side of the spool housing assembly encompassing said first spool housing second port and said second spool housing first port and having a fourth flow passageway therein;

a first spool member slidably received in said first spool housing and having spaced apart first and second piston members;

a second spool member slidably received in said second spool housing and having spaced apart first and second piston members; and

means for simultaneously positioning said spool members between two positions whereby in one position communication is provided between said first flow passageway and said first spool housing first port and between said second flow passageway and said second spool housing first port and in the other position communication is provided between said first flow passageway and said first housing second port and said second flow passageway and said second housing second port, communication being thereby provided in the first position between said first and third flow passageways and said second and fourth flow passageways and in the second position between said first and fourth passageways and between said second and third passageways.

4,460,018

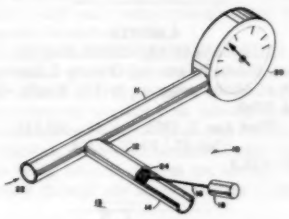
ULTRALOW PRESSURE RELIEF VALVE

William R. Sweeney, Richmond, Va., assignor to Philip Morris, Incorporated, N.Y.

Filed Jun. 19, 1981, Ser. No. 275,528

Int. Cl.³ F15B *21/00*; G01L *19/06*

U.S. Cl. 137—807 **6 Claims**



1. An ultralow pressure relief valve comprising:

a pressure responsive means connected to an area of high pressure;

a capillary tube connecting the area of high pressure and an area of low pressure;

a sealing fluid contained in said capillary tube and capable of sealing said tube by capillary attraction against low differential pressures;

a reservoir on the low pressure side of said capillary tube; and

a capillary wire extending from said reservoir to said capillary tube.

4,460,019

SEWER AND DRAIN PLUG

Duane R. Condon, Ramona, Calif., assignor to Condon Technologies, Inc., Ramona, Calif.

Continuation-in-part of Ser. No. 274,812, Jun. 18, 1981, abandoned. This application Feb. 18, 1983, Ser. No. 467,520

Int. Cl.³ G01M *3/02*

U.S. Cl. 138—90 23 Claims

1. A plug for a drainage conduit, comprising:

a tubular bulb made of an elastomeric material and expansible laterally of its longitudinal axis by a predetermined amount of fluid pressure supplied to its internal cavity to thereby seal the conduit when located internally thereof;

means for supplying fluid under pressure to the internal cavity of the bulb through a first end of the bulb; and

spill over valve means coupled to a second end of the bulb for releasing fluid from the bulb after the bulb has expanded to seal the conduit while maintaining the expanded size of the bulb and the sealing engagement between the bulb and the conduit, including a cylindrical member about which the second end of the bulb lies in contracted engagement, at least one external channel formed in the cylindrical member so that one end of the channel is connected with the internal cavity of the bulb when the bulb is expanded to seal the conduit and a support member positioned within the channel for preventing the bulb from deflecting into the channel.

4,460,020

DEVICE FOR ACTUATING HEDDLE FRAMES IN WEAVING LOOMS

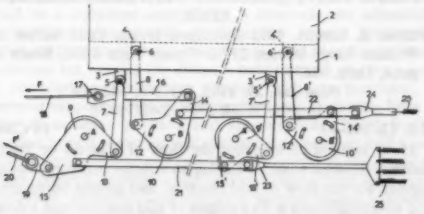
Yves Juillard, Mulhouse, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse Cedex, France

Filed Apr. 29, 1982, Ser. No. 373,123

Claims priority, application France, May 12, 1981, 81 09397

Int. Cl.³ D03C *13/00*

U.S. Cl. 139—82 11 Claims



1. In a weaving loom operable with a shedding mechanism, the loom including a plurality of heddle frames positioned side-by-side and numbered consecutively as odd and even numbered frames, a device for actuating said frames comprising: a row of at least four parallel support shafts extending transversely beneath said frames and numbered consecutively with odd and even numbers, a plurality of bellcrank rockers, each pivotally mounted on one of said shafts and similarly numbered, and a drive mechanism comprising first drive means coupling said rockers on said first and third shafts to said odd numbered frames, second drive means coupling said rockers on said second and fourth shafts to said even numbered frames, said first and second drive means being coupled to said shedding mechanism, whereby said frames are reciprocated upward and downward.

4,460,021

CATCHER AND A METHOD OF OPERATING A GRIPPER PROJECTILE CATCHER

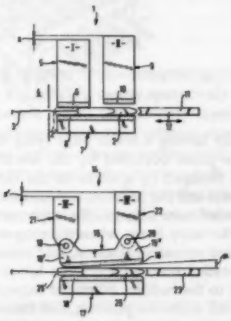
Hans Demuth, Winterthur, Switzerland, and Walter Gruber, Constance, Fed. Rep. of Germany, assignors to Sulzer Brothers, Limited, Winterthur, Switzerland

Filed Apr. 5, 1983, Ser. No. 482,244

Claims priority, application Switzerland, May 7, 1982, 2839/82

Int. Cl.³ D03D *49/56*

U.S. Cl. 139—185 6 Claims



1. A method of operating a gripper projectile catcher of a weaving machine comprising the steps of

braking a projectile traveling in a picking direction under a braking force in at least two sequentially disposed braking stations to a stop;

reducing the braking force in the last of the braking stations while retaining the braking force in the first of the braking stations; and

moving the stopped projectile in a reverse direction to an ejection position.

4,460,022

WARP STOP MOTION WITH CONTROL BAR

John B. Sherrill, P.O. Box 578, Gastonia, N.C. 28052

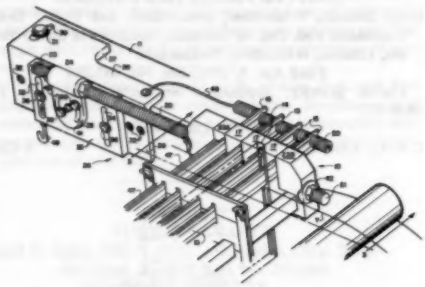
Continuation-in-part of Ser. No. 129,105, Mar. 10, 1980, Pat. No. 4,338,972. This application May 28, 1982, Ser. No. 383,029

Int. Cl.³ D03D *51/28*

U.S. Cl. 139—369 5 Claims

1. A pivotal warp stop-motion mechanism comprising an L-shaped mounting bracket including a horizontal plate and a vertical plate for attachment to the frame of a loom having heddles and a warp beam with warp yarns extending therefrom and through the heddles, a plurality of threaded bores extending transversely therethrough and arranged in equally spaced relation to each other in a row extending parallel to the longitudinal axis of the mounting bracket, a mounting plate having a pair of vertically extending slots spaced from each other a distance less than the length of the row of threaded openings and registrable with a selected pair of threaded openings, bolts loosely penetrating the vertical slots in the mounting plate and threadably engagable with the threaded openings in the verti-

cal portion of the mounting bracket, a pivot plate pivotally connected at its axis to the mounting plate, said pivot plate having a vertically extending slot of arcuate configuration on each side of the pivotal connection, a tubular extension of the pivot bracket extending above the pivotal connection, a threaded rod loosely receivable through the tubular extension, the threaded rod having a fixed end adjacent the tubular extension and a free end portion spaced further from the tubular extension and supporting the warp stop-motion mechanism, the warp stop-motion mechanism including spacer blocks threaded on the threaded rod on each side of the loom, a plurality of electrodes supported by the spacer blocks and having lower edges lying in a common plane, a drop wire supported by each warp yarn about one of said electrodes and



a control bar having a lower edge lying in a horizontal plane beneath the plane occupied by the lower edges of the electrodes and clamped by spacers on the threaded rod between the electrodes and the heddles, and said mounting plate having a first threaded bore adjacent the upper end of the arcuate slot closest to the warp beam when the stop-motion mechanism is in its lowered operative position, said mounting plate having a second threaded bore adjacent the lower end of the arcuate slot closest to the heddles when the stop-motion mechanism is in its lowered operative position, and threaded bolts extending loosely through the arcuate slots and threadably engagable with the first and second threaded openings in the mounting plate to form stops for automatically positioning the stop-motion mechanism at its desired operative position when lowered and to its maximum elevated position when raised.

4,460,023

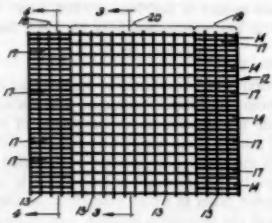
METHOD OF MAKING DRYER FABRIC HAVING ZONES OF DIFFERENT PERMEABILITY

Peter Mullaney, Raleigh, N.C., assignor to Huyck Corporation, Wake Forest, N.C.

Continuation-in-part of Ser. No. 197,551, Oct. 16, 1980, abandoned. This application May 26, 1982, Ser. No. 382,234

Int. Cl.³ D03D *23/00*; D21F *7/12*

U.S. Cl. 139—383 A **14 Claims**



1. A method for making an endless a dryer fabric belt having zones of different permeability for use in a papermaking machine:

weaving machine direction and cross machine yarns into a multi-layer weave while interweaving additional cross machine direction stuffer yarns into only a selected zone or zones across the width of the fabric; and

removing from the fabric, by shearing, those segments of said additional cross machine direction yarns which are not interwoven, to produce longitudinally extending zones in said dryer fabric across the width thereof of different fluid permeabilities.

4,460,024

APPARATUS FOR LOOPING METALLIC WIRE OR THE LIKE

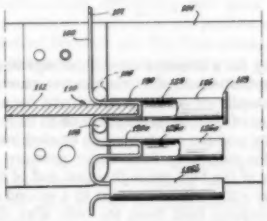
Gustav Erhardt, Bergstrasse 25, D-6969 Hainstadt, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,614

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 8137901[U]

Int. Cl.³ B21F *45/00*

U.S. Cl. 140—93 R **13 Claims**



1. Apparatus for converting a length of wire into a succession of coherent loops and inserting said loops into pockets of discrete metallic components, particularly for converting a wire-like electrical conductor into an undulate body with loops which are insertable into said pockets, comprising a wire feeding device arranged to intermittently supply a length of wire along a predetermined path wherein the wire moves lengthwise in a predetermined direction; a pair of spaced-apart bending tools adjacent to one side of said path and defining a gap across which the wire extends, one of said tools being downstream of the other tool, as considered in said direction; a reciprocable deforming device movable from said one side of said path into said gap to thereby convert the adjacent portion of the wire into a loop which is disposed between said tools and to insert said loop into said pockets; and means for intermittently moving said one tool to an inoperative position in which a freshly formed loop can be advanced in said direction.

4,460,025

FILLING VALVE ASSEMBLY WITH FIBER SHEARING EDGE

William J. Scholle, 4072 Belvedere, Irvine, Calif. 92714, and William Lloyd-Davies, 21703 Ocean Vista #202, South Laguna, Calif. 92677

Filed Jan. 29, 1982, Ser. No. 343,919

Int. Cl.³ B65B *3/04*; B67C *3/28*

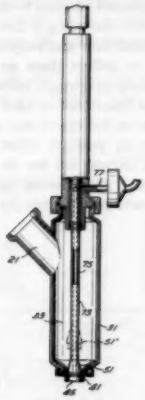
U.S. Cl. 141—1 **14 Claims**

11. A method of stopping the flow of a liquid or viscous material through a nozzle having an internal surface defining a conduit for the flow of said material, and having an upstream end communicating with a source of said material and a downstream end, said interior surface converging slightly toward said downstream end so that the cross-sectional area of said conduit gradually decreases through at least a portion of said nozzle in the downstream direction, comprising:

placing a plug in said conduit to close off the flow of said material through said conduit;

scraping a knife edge along said interior surface to make a

wiping cut of fibers and lumps in said material to completely separate any of said material that is downstream of



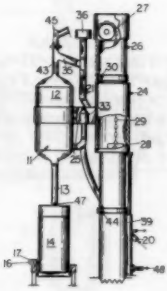
said plug from any of said material that is upstream of said plug.

4,460,026

LIQUID FILLING APPARATUS AND METHOD

Byron H. Hurley, Rte. 1, Box 214-B, Julian, N.C. 27283, and Walter G. Ricks, Rte. 1, Box 108-C, Pleasant Garden, N.C. 27313

Filed Feb. 16, 1982, Ser. No. 348,847
Int. Cl.³ B67C *3/04*
U.S. Cl. 141—1 **8 Claims**



1. Liquid filling apparatus for delivering an exact amount of liquid to a container comprising: a reservoir, an adjustable displacement means, said displacement means positioned within said reservoir, elevating means, said elevating means positioned for varying the distance between said reservoir and the container, said elevating means including a stanchion, a reservoir support means, said support means elevatable from a lower to an upper position, said support means being firmly attached to said reservoir and slidably connected to said stanchion, a counterpoise, said counterpoise joined to said support means, control circuitry, and said circuitry including a programmable controller and elevating sensing means whereby said circuitry controls the elevation of said reservoir relative to the container.

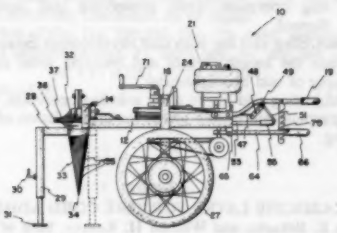
5. The process of delivering liquid to a container comprising the steps of: adjusting the position of a displacing means in a liquid reservoir, filling said reservoir with liquid by pumping the liquid into the reservoir until said liquid contacts a liquid sensing means, sending a signal from the sensing means to a programmable controller to activate a timing cycle, positioning said reservoir relative to the container for fluid discharge, discharging the liquid from said reservoir, and elevating said reservoir relative to the container during the discharge.

4,460,027

LOG SPLITTING DEVICE

William E. Davis, Sr., Rte. 1, Box 33, Seven Springs, N.C. 28578

Filed Sep. 20, 1982, Ser. No. 419,794
Int. Cl.³ B27L *1/00*
U.S. Cl. 144—194 **13 Claims**



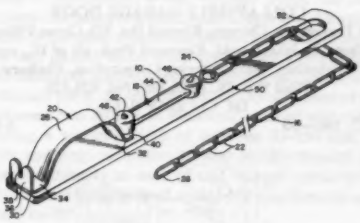
1. An improved log splitting device comprising: a propulsion means; a screw type log splitting means operatively connected to said propulsion means; means for movably supporting said propulsion means and its associated log splitting means relative to the ground; means operatively connecting said propulsion means to said supporting means for driving such supporting means and handle means for manually manipulating said log splitting device during the splitting process whereby an improved log splitter is provided.

4,460,028

LOG HANDLING DEVICE AND METHOD THEREFOR

Richard T. Henry, 1102 Kelly Rd., Bellingham, Wash. 98226

Filed Apr. 12, 1983, Ser. No. 484,199
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—366 **14 Claims**



1. A log handling device for biased, adjustable circumferential envelopment of a log during a log splitting operation and for carrying said log, comprising:

a. envelopment means for encircling a log to be split intermediate the length thereof;

b. biasing means for maintaining a circumferential compressive force between said envelopment means and said log and preserving the general conformation thereof during a log splitting operation;

c. handle means for grasping said envelopment means and manipulating said log during or subsequent to said splitting operation while preserving said conformation thereof.

14. A method for handling a log during a log splitting operation thereon, comprising the steps of:

a. providing a log handling device for biased, adjustable circumferential envelopment of a log during a log splitting operation and for carrying said log thereafter, comprising:

i. envelopment means for encircling a log to be split intermediate the length thereof;

ii. biasing means for maintaining a circumferential compressive force between said envelopment means and said log and preserving the general conformation thereof during a log splitting operation;

iii. handle means for grasping said envelopment means and manipulating said log during or subsequent to said splitting operation while preserving said conformation thereof;

b. encircling said log with said envelopment means intermediate the length thereof and securing same against the force of said biasing means;

c. subjecting said log to a log splitting operation; and,

d. grasping said handle means for manipulation of said split log.

4,460,029

OXAZOLINE LATEX FOR TIRE CORD ADHESION

James E. Schuetz, and William H. Keskey, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 1, 1982, Ser. No. 445,804
Int. Cl.³ C08F *26/00*
U.S. Cl. 152—359 **7 Claims**

1. A composite which is a pneumatic tire comprising

(a) a polymeric elastomer,

(b) a substrate and

(c) an adhesion promoting amount of a latex, said latex comprising discrete polymer particles which have been polymerized from

(i) an addition polymerizable oxazoline in an amount such that the latex will produce greater adhesion between a substrate and a polymeric elastomer than a similar latex not having the oxazoline and

(ii) at least one other monomer

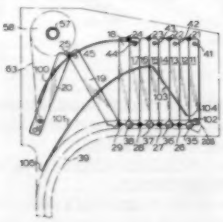
wherein the elastomer is adhesively bound to the substrate, and such adhesion is more tenacious than if the latex were not present.

4,460,030

COLLAPSIBLE GARAGE DOOR

Kazuo Tsunemura, Chicago; Kiyoshi Iha, Elk Grove Village, and Anthony T. Janiszewski, Elmwood Park, all of Ill., assignors to Chamberlain Manufacturing Corporation, Elmhurst, Ill.

Filed Sep. 29, 1982, Ser. No. 428,328
Int. Cl.³ E06B *9/32*
U.S. Cl. 160—35 **6 Claims**



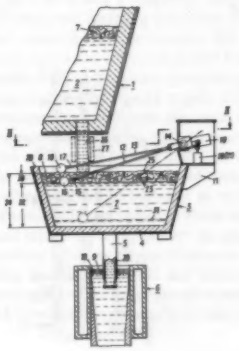
1. A collapsible door comprising, a frame, a plurality of horizontal extending panels joined edge-wise by hinges which are mounted alternately on the front and back of the door so that it can fold similar to an accordian, a pair of channel-shaped rails mounted on opposite edges of the door and having vertical portions and smaller horizontal portions joined by curved portions, rollers mounted on the ends of certain of said panels and received in said rails, and guide pins mounted on the ends of certain of said panels and adapted to slide on said pair of rails outside of the channels, including a first curved rail mounted on said frame above said door and adapted to engage the guide pins on said panels to deflect them so that they fold as an accordian when the door is opened, including a second curved rail mounted on said frame above said door and adapted to engage the guide pins on the upper one of said panels to invert it 180 degress from its position when the door is closed, wherein said second curved rail has an end closely adjacent said channel-shaped rail, and wherein said rollers are mounted on the second and fourth panels from the top of the door when it is closed.

4,460,031

ARRANGEMENT FOR PREVENTING SLAG FROM PENETRATING INTO A CONTINUOUS CASTING MOULD DURING CONTINUOUS CASTING

Horst Wiesinger; Fritz Gränitz; Reinhard Hargassner, and Hubert Bramberger, all of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Dec. 8, 1980, Ser. No. 214,131
Claims priority, application Austria, Jan. 25, 1980, 412/80
Int. Cl.³ B22D *11/16*
U.S. Cl. 164—150 **4 Claims**



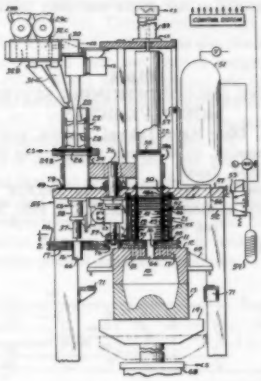
1. In an arrangement at a continuous casting plant for preventing slag from penetrating into a continuous casting mould during the continuous casting of a metal melt, which arrangement includes a tundish, a reservoir arranged above said tundish, said continuous casting mould being arranged below said tundish, said metal melt flowing from said reservoir covered with a slag layer on top into said tundish covered with a slag layer on top and fron said tundish into said continuous casting mould, and a metal-melt-bath level and a slag-bath level being formed in said tundish, the improvement comprising a first floating body mounted on a first carrying arm and floating on said metal-melt-bath level, a second floating body mounted on a second carrying arm and floating on said slag-bath level, a first measuring means connected with said first carrying arm and a second measuring means connected with said second carrying arm, said first and said second measuring means being adapted to measure the position assumed by the respective one of said first and said second carrying arms.

4,460,032

METHOD AND APPARATUS FOR BLOWING CORES ETC. USING A PLUNGER-CLEANED BLOW BOX SUITABLE FOR QUICK-SET SAND

Robert S. Lund, Elmhurst, Ill., assignor to Pettibone Corporation, Chicago, Ill.

Filed Jan. 25, 1982, Ser. No. 342,071
Int. Cl.[3] B22C *15/28*
U.S. Cl. 164—195 8 Claims



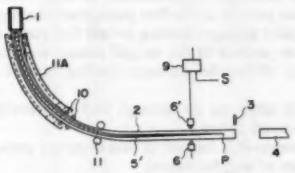
1. The combination of a foundry blow box for blowing sand from the blow box into a mold, said box having a sand receiving cavity leading to a blowing exit and being constructed for the supply of fluidizing air to said cavity; and displacement means moving within the cavity for displacing the sand in the cavity to cause more complete removal of the sand from the cavity through said exit during a blow.

4,460,033

METHOD FOR CONTINUOUS CASTING OF STEEL

Osamu Tsubakihara; Koji Kagaya; Hiroo Okada, all of Sakaishi, and Katsuhiro Kawashima, Fukuokaken, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 280,550
Claims priority, application Japan, Jul. 3, 1980, 55-91043
Int. Cl.[3] B22D *11/16*
U.S. Cl. 164—454 4 Claims



1. A method for continuous casting of steel which comprises:

continuously casting a steel slab;

withdrawing the slab along a withdrawal path defining a withdrawal direction;

inspecting a profile of the unsolidified region in the solidified shell of a slab in a direction transverse to the withdrawal direction of the slab before completion of solidification of the slab obtained by said continuous casting step; and

controlling the cooling pattern of the slab so that the thickness ratio of said profile is in the following range;

$b/a = 1.1\text{–}2.5$

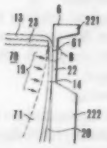
wherein a is the thickness of the central portion of the unsolidified region in the transverse direction of the slab (mm) and b is the thickness of the edge portions thereof (mm).

4,460,034

MOLD FOR CONTINUOUS CASTING

Tsuyoshi Saeki, No. 2200-24, Aza Ushirotani, Oaza Nakama, Nakama-shi, Fukuoka-ken; Katsuhiro Kawashima, No. 1-17-45, Okura, Yahata-Higashi-ku, Kitakyushu-shi, Fukuoka-ken; Mitsuo Murata, No. 6-28-8, Hinosato, Munakata-cho, Munakata-gun, Fukuoka-ken, and Mitsuhiro Oota, No. 66-23, Izumi, Kimitsu-shi, Chiba-ken, all of Japan

Continuation of Ser. No. 220,233, Dec. 23, 1980, abandoned.
This application Jun. 22, 1983, Ser. No. 506,864
Int. Cl.[3] B22D *11/04, 11/10*
U.S. Cl. 164—478 2 Claims



1. A method for continuously casting molten steel with the use of a mold of the type having a horizontally disposed, open top portion, elongated side walls extending generally vertically from said top portion, said side walls having each an exterior surface and at least one of said side walls having a horizontally extending groove formed therein having a vertical width within the range of 50–150 mm being located within approximately 300 mm from said top portion, the steps comprising:

applying an oscillation of between 10 KHz to 30 KHz to said groove so as to vibrate said mold at the location of said groove while molten steel is being continuously cast into said mold and with the direction of vibration being generally perpendicular to the direction of flow of the molten steel.

2. A mold suitable for continuous casting of molten metal comprising in combination a wall member which has locally thinned parts extending in a horizontal direction and located at the portion of the mold which is at the starting point of solidification of said molten metal when the molten metal is in said mold and means for applying high frequency oscillation to said locally thinned parts, the thickness of said locally thinned parts being between 5 to 30 mm in thickness; each of said thinned parts having a vertical width of between 50–150 mm; said means for applying oscillation to said locally thinned parts being secured directly to each of said thinned parts; each of said thinned parts being located within 300 mm from the upper end of said mold.

4,460,035

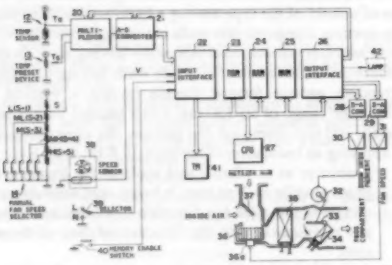
AIR-CONDITIONING METHOD AND SYSTEM FOR AN AUTOMOTIVE VEHICLE WITH NONVOLATILE MEMORY FEATURE

Masanori Mizote, Yokosuka, and Yasuyuki Uekusa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 11, 1982, Ser. No. 357,073
Claims priority, application Japan, Mar. 12, 1981, 56-34536
Int. Cl.[3] G05D *23/00;* B60H *3/04;* F24F *7/00*
U.S. Cl. 165—12 12 Claims

8. An air conditioning system by which air temperature within a passenger compartment is controlled, which comprises:

(a) a cooling unit for cooling air introduced into the passenger compartment;
(b) a heating unit for heating air introduced into the passenger compartment;
(c) and air-mix door settable to an individual percentage setting for directing a portion of the air cooled by said cooling unit toward said heating unit to be heated, said air-mix door percentage setting thereby controlling the temperature of air outputted into the passenger compartment;
(d) a blower fan motor for driving air through the air conditioning system, said blower fan motor controlling the amount of air outputted into the passenger compartment;
(e) a temperature sensor for detecting passenger compartment air temperature Ta and for generating signals corresponding thereto;
(f) a temperature preset device for presetting passenger compartment air temperature Ts and for generating signals corresponding thereto;
(g) a blower-fan motor speed selector for manually selecting a speed of said blower fan motor and for generating signals corresponding thereto, said selector being manually operated by a passenger;
(h) a microcomputer having:
(1) multiplexer means connected to said temperature sensor, to said temperature preset device and to said blower-fan motor speed selector, for receiving said outputting the corresponding signals sequentially;



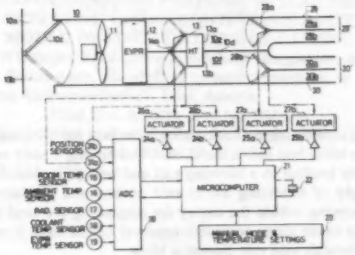
(2) an input interface means connected to said multiplexer means for converting and outputting signals received therefrom;
(3) a read-only memory means for storing programs to be executed by said microcomputer;
(4) a random-access memory means for temporarily storing data;
(5) a non-volatile memory means for storing manually-selected blower-fan motor speed data even after the system is turned off;
(6) a central processing unit for determining blower-fan motor speed in accordance with a predetermined relationship between blower-fan motor speed and the difference between passenger compartment air temperature Ta and preset passenger compartment air temperature Ts which is stored in said read-only memory means and for determining air-mix door opening percentage in accordance with a predetermined relationship between the air-mix door opening percentage and the difference between the passenger compartment air temperature Ta and the preset passenger compartment air temperature Ts which is stored in said read-only memory means, said central processing unit further operable for correcting the determined blower fan motor speed and the determined air-mix door opening percentage in accordance with the detected passenger compartment air temperature Ta, the preset passenger compartment air temperature Ts and selected blower-fan motor speed S stored in said non-volatile memory means;
(7) an output interface means for converting and outputting a control signal to operate said blower-fan motor at the corrected blower-fan motor speed and a control signal to actuate said air-mix door at the corrected air-mix door opening percentage,
whereby the passenger compartment air temperature is maintained at a preset desired value with said blower-fan motor operated at the speed manually selected by the passenger.

4,460,036

MULTIZONE AIR-CONDITIONING SYSTEM FOR MOTOR VEHICLES

Akiro Yoshimi, Obu; Akio Takemi, Kariya, and Kazuyoshi Suzuki, Ichinomiya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 29, 1982, Ser. No. 393,519
Claims priority, application Japan, Jul. 3, 1981, 56-104793
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—12 **5 Claims**



1. An air-conditioning system for a motor vehicle, comprising:
an air distribution conduit including a common passageway having an inlet at one end thereof and a pair of first and second passageways leading from said common passageway, upstream portions of said first and second passageways sharing a common partition and downstream portions of said first and second passageways being horizontally spread apart from each other and respectively having first and second outlets at horizontally spaced apart locations of a passenger compartment of said vehicle, the downstream portion of the first passageway having a first pair of parallel passages leading to said first outlet and the downstream portion of the second passageway having a second pair of parallel passages leading to said second outlet;
fan means for directing air through said inlet toward said first and second outlets;
evaporator means (**12**) located in said common passageway downstream of said fan means;
first and second mixing dampers (**14*a*, 14*b***) located respectively in said first and second passageways downstream of said evaporator;
heater means (**13**) having first and second half portions (**13*a*, 13*b***) located in said first and second passageways respectively downstream of said first and second mixing dampers;
a first distribution damper (**28*a***) located upstream of said first pair of vertically spaced passages and a second distribution damper (**28*b***) located upstream of said second pair of vertically spaced passages, there being a plurality of adjustable settings (T_1, T_2, T_3) for each of said distribution dampers;
temperature sensors (**15,16**) for measuring the temperatures (Tr, Tam) inside and outside the passenger compartment;

temperature setting means (**23**) for setting first and second reference temperatures ($Tset_1$, $Tset_2$) desired for said first and second horizontally spaced apart locations of the passenger compartment;

data processing means (**21**) for deriving first and second estimated values (Tao_1, Tao_2) of temperatures at said first and second outlets from said first and second reference temperatures ($Tset_1$, $Tset_2$) and the measured inside and outside temperatures (Tr, Tam), deriving first and second temperature control signals (SW_1, SW_2) from the estimated values (Tao_1, Tao_2) trimming said adjustable settings (T_1, T_2, T_3) of each of said distribution dampers in response to said first and second temperature control signals (SW_1, SW_2), and comparing said first and second estimated values (Tao_1, Tao_2) with each of said trimming settings (T_1', T_2', T_3', T_1'', T_2'', T_3'') to generate first and second distribution control signals; and

a plurality of motor means (**26***a*, **26***b*, **27***a*, **27***b*) for controlling said first and second mixing dampers in response to said first and second temperature control signals (SW_1, SW_2) respectively and controlling said first and second distribution dampers in response to said first and second distribution control signals respectively.

4,460,037

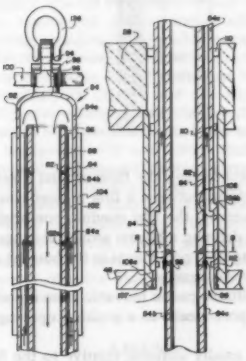
TUBE CONSTRUCTION FOR FLUIDIZED BED COMBUSTOR

Angelo De Feo, Totowa, and William Hosek, Mt. Tabor, both of N.J., assignors to Curtiss-Wright Corporation, N.J.

Division of Ser. No. 81,935, Oct. 4, 1979, Pat. No. 4,290,387. This application Jan. 21, 1981, Ser. No. 226,688

Int. Cl.[3] **F28D** *7/12*; **F28F** *9/06*

U.S. Cl. 165—76 **11 Claims**



4. A tube construction for the fluid bed reactor comprising an outer tube, an inner tube disposed within and spaced radially inwardly of said outer tube, an outer tube cap closing off the top of said outer tube and spaced from the top of said inner tube, the bottom of said outer tube being connectable to a fluid for the passage of fluid in the space between said outer and inner tubes to the top of said inner tube and then downwardly through said inner tube for discharge at the bottom thereof, a trunnion connected to said tube cap and extending upwardly therefrom, and a lifting shackle connected to said trunnion.

4,460,038

INSTALLATION FOR TESTING A WELL AND A PROCESS FOR USE THEREOF

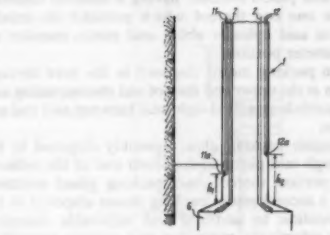
Henri Clamens, Garderes, France, assignor to Societe Nationale Elf Aquitaine, France

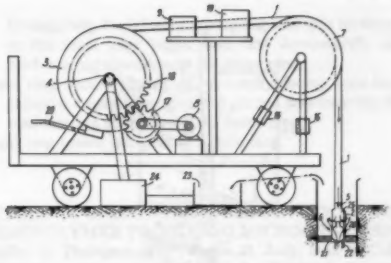
Filed Jan. 10, 1983, Ser. No. 456,810

Claims priority, application France, Jan. 12, 1982, 82 00388

Int. Cl.[3] **E21B** *47/12*

U.S. Cl. 166—66 **11 Claims**





1. An installation for testing a well by means of a pump submerged in the well and actuated by an electric or hydraulic motor characterized in that

a reinforced flexible tube (**1**) carries said pump in said well,

a drum (**3**) is provided at the surface and about which the tube is wound,

a motor means (**8**) is provided for rotating said drum to lower and to vary the submergence of the pump,

and means (**11***a*, **12***a*, **22**) are associated with the flexible tube adjacent the pump for detecting the level of the fluid above the pump in the well.

4,460,039

WELLHEAD VALVE REMOVAL AND INSTALLATION TOOL

John W. Knight, Shreveport, La., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Nov. 4, 1982, Ser. No. 439,082

Int. Cl.[3] **E21B** *19/16*

U.S. Cl. 166—80 **9 Claims**

1. A tool adapted to operatively connect on an operating wellhead assembly for use in the removal or replacement of wellhead outlet valves under high pressure conditions, said tool comprising:

An elongate housing open at one end and having an axial bore extending from said open end substantially throughout the length of said housing, said housing having connecting means adjacent its open end for mounting on a wellhead with the axial bore of said housing in communication and substantially aligned with the bore of the wellhead;

an elongate rod mounted in the bore of said housing and

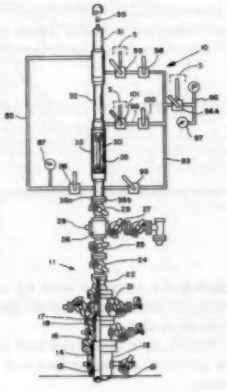
adapted for axial movement therein, said rod being of such length that one end thereof extends from the open end of said housing when positioned in said housing, and adapted at said one end for removably carrying a plug means for installation in the bore of the wellhead;

a cylinder provided in a section of said housing by an enlarged portion of said housing bore;

a tubular piston member slidably mounted in said cylinder in sleeved relationship to said rod and being movable in said cylinder between an uppermost position and a lowermost position, said piston member having a reduced diameter portion at one end thereof which provides an annular chamber in said cylinder about said piston member reduced diameter portion;

a first piston packing means disposed in the bore through said piston at the upper end thereof and encompassing said rod for establishing a fluid-tight seal between said rod and said piston;

a first adjustable packing gland assembly disposed in the bore through said piston at the lower end of the reduced diameter portion thereof, said packing gland assembly including a second piston packing means disposed in encircling relation to said rod and adjustable clamping means for selectively energizing and radially expanding said second piston packing means into clamping engagement with said rod;



a second adjustable packing gland assembly disposed in the bore of said housing adjacent one end thereof, said second adjustable packing gland assembly including lower annular packing means disposed in encircling relation to said rod and a second adjustable clamping means for selectively energizing said lower annular packing means to radially expand said lower annular packing means into clamping engagement with said rod;

a bi-directional packing seal means in the bore of said housing in encircling relationship to said rod and establishing a fluid-tight sealing relationship with said rod, said bi-directional packing means being disposed in said housing bore at a location spaced from the upper end of the piston when the piston is in its uppermost position;

means for selectively communicating fluid pressure in said well bore to the bore of said housing at a location above said bi-directional packing means thereby equalizing the pressure on both ends of said rod when the tool is mounted in a wellhead and the lower end of the rod is exposed to the well pressure;

means for selectively communicating fluid pressure in said well bore to the bore of said housing and the upper end of said piston when said piston is in its uppermost position to thereby drive said piston to its lowermost position and said rod downwardly by a distance corresponding to the piston stroke when said first clamping means clamps the piston to the rod and said second clamping means is in non-clamping condition; and

means for selectively communicating fluid pressure in said well bore to said annular chamber to thereby drive the piston to its uppermost position when said second clamping means is in clamping relation to said rod and said first clamping means is in non-clamping condition, said housing having a section thereof which contains said first and second adjustable packing gland assemblies and being provided with openings through which said packing gland assemblies are accessible for adjustment.

4,460,040

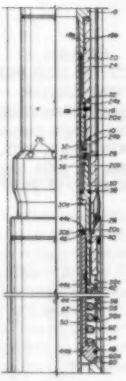
EQUALIZING ANNULUS VALVE

Michael L. Bowyer, Aberdeen, Scotland, assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Nov. 24, 1982, Ser. No. 444,408

Int. Cl.[3] E21B *34/10*

U.S. Cl. 166—129 **15 Claims**



1. A valve for controlling the flow around a seal element disposed in the annulus between a first tubular conduit and a second conduit receiving the first conduit, comprising:

a valve housing defining a bypass around said seal element;

radially extending flow port means in the housing and at one end of said bypass passage;

a first axially shiftable piston movable from a position closing the flow port means to a position opening the flow port means;

a second piston axially shiftable relative to the first piston and the valve housing to an upper position when the annulus pressure below said seal element exceeds the annulus pressure above said seal element;

abutting means on the second piston for limiting downward travel of the first piston when the annulus pressure below said seal element exceeds the annulus pressure above said seal element; and

equalizing means in the first piston for annulus pressure equalization through the flow port means and bypass passage when downward travel of the first piston is limited by the second piston.

4,460,041

SUBTERRANEAN WELL TOOL WITH PRESSURE EQUALIZING RELEASE

William O. Berryman, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Sep. 13, 1982, Ser. No. 417,012
Int. Cl.³ E21B 33/12
U.S. Cl. 166—134 14 Claims

1. A well tool adaptable for movement longitudinally in a subterranean well conduit, comprising: a tubular body; first and second normally retracted slip means disposed around said body; first and second expander means responsive to movement of said body, said expander means being relatively movable into engagement with said first and second slip means, respectively, to selectively expand only one of said first and second slip means against the well conduit, one of said first and second slip means when in expanded position resisting downward movement of said well tool within said conduit and the other of said first and second slip means when in expanded position resisting upward movement of said well tool within said conduit; elastomeric packing means adjacent each said expander having a unidirectional sealing engagement with the conduit, whereby a downward fluid pressure differential on said elastomeric packing means shifts one of said expander means downwardly to expand said one slip means and an upward fluid pressure differential shifts the other said expander means upwardly to expand said other slip means; a mandrel operatively engageable with said tubular body to retract the tool from the well, said mandrel defining a bypass fluid passage extending around said other elastomeric packing means; and valve means in said byass fluid passage operable by longitudinal movement of said mandrel in either direction relative to said other expander means to open said bypass fluid passage, said valve means being opened by upward movement of said mandrel prior to effective disengaging movement of said slip and expander means.

4,460,042

DUAL RING CASING HANGER

Edward M. Galle, Jr., Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Oct. 29, 1981, Ser. No. 316,397
Int. Cl.³ E21B 23/00
U.S. Cl. 166—217 16 Claims

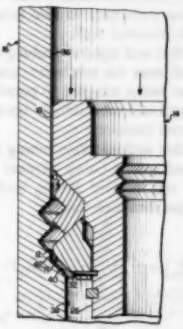
1. A hanger apparatus for suspending an upright inner pipe from an outer pipe, the combination comprising:

an upwardly facing load-bearing shoulder on the outer pipe;

first and second downwardly facing load-bearing shoulders on the inner pipe;

an expandable split locking ring having a downwardly facing load-bearing shoulder engageable with said upwardly facing load-bearing shoulder on the outer pipe and an upwardly facing load-bearing shoulder engageable with said first downwardly facing load-bearing shoulder on the inner pipe; and

ring means, coupled to the inner pipe and engaging said split



locking ring, for releasably coupling said split locking ring to the inner pipe below said first downwardly facing load-bearing shoulder on the inner pipe,

said ring means having an upwardly facing load-bearing shoulder engageable with said second downwardly facing load-bearing shoulder on the inner pipe,

said ring means comprising a solid ring.

4,460,043

METHOD OF ENHANCING OIL RECOVERY BY USE OF EXOPOLYMER PRODUCING MICROORGANISMS

Bradley G. Thompson, and Thomas R. Jack, both of Calgary, Canada, assignors to NOVA/Husky Research Corporation Ltd., Alberta, Canada

Filed Aug. 5, 1982, Ser. No. 405,371
Int. Cl.³ E21B 43/22
U.S. Cl. 166—246 17 Claims

1. In the enhanced recovery of mineral oil by supplying a drive fluid to an oil-bearing underground formation, a method of reducing permeability of zones in the formation having higher permeability than surrounding zones comprising:

(a) injecting into the underground formation microorganisms capable of producing substantially insoluble exopolymer in the presence of a trigger compound and capable of growing under conditions of oil-bearing underground formations, such that said microorganisms accumulate in said higher permeability zones, said microorganisms being injected in an aqueous medium substantially free of said trigger compound; and

(b) injecting the trigger compound into the underground formation so as to enhance production of substantially insoluble exopolymer by said microorganisms, whereby the exopolymer reduces the permeability of said higher permeability zones.

4,460,044

ADVANCING HEATED ANNULUS STEAM DRIVE

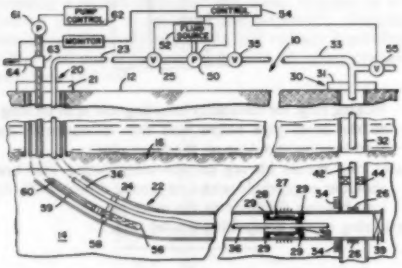
Luther T. Porter, Anaheim, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 31, 1982, Ser. No. 413,324
Int. Cl.³ E21B 36/00, 43/24
U.S. Cl. 166—252 14 Claims

1. A method for assisting the recovery of viscous petroleum from a petroleum-containing formation comprising:

(a) forming and completing a substantially horizontal well through said petroleum-containing formation;

(b) forming and completing a second well having a portion thereof in close proximity to the subsurface end of said substantially horizontal well;
(c) perforating a portion of said substantially horizontal well near the subsurface end thereof adjacent to said second well;
(d) perforating a portion of said second well at said portion thereof in close proximity to said subsurface end of said substantially horizontal well;
(e) placing a packer and injection tubing in said substantially horizontal well near the subsurface end thereof, said tubing and packer being adapted to permit a first fluid to be injected through said substantially horizontal well and out said perforations therein;
(f) placing a packer and injection tubing in said second well, said packer and tubing being adapted to permit fluids to flow into or out of said tubing and said second well through said perforations therein;



(g) injecting said first fluid through said tubing in said substantially horizontal well, through said perforations therein, and into said second well through said petroleum-containing formation;
(h) monitoring the fluid produced from said second well to identify said first fluid and petroleum produced from said formation, said monitoring including identifying the ratio between said first fluid produced and said petroleum produced as well as the pressure of fluids in said second well;
(i) based on said monitored ratio and said producing pressure, injecting a second fluid through said tubing in said second well, through said perforations therein into said formation and through said formation into said substantially horizontal well;
(j) and producing said viscous petroleum and said fluids through said substantially horizontal well.

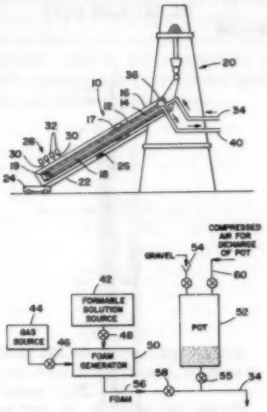
4,460,045

FOAM GRAVEL PACKING IN HIGHLY DEVIATED WELLS

Thomas D. Elson, Chino, and Ralph S. Millhone, Brea, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jul. 6, 1982, Ser. No. 395,201
Int. Cl.³ E21B *43/04*
U.S. Cl. 166—278 **12 Claims**

1. A method for packing particulate material in the annulus surrounding a liner having production perforations therethrough positioned in a subsurface well bore having substantial deviation from vertical comprising the steps of:
(a) positioning said liner in said subsurface well bore having substantial deviation from the vertical adjacent to said subsurface to be packed near the end of a well bore conductor and centralizing said liner in said well bore,
(b) generating at the earth's surface a relatively dry stable foam material having a liquid volume fraction between 0.02 and 0.2,
(c) fluidizing said particulate material with said stable foam,
(d) forcing said fluidized foam-particulate mixture down said well bore conductor and into said annulus surrounding said liner,



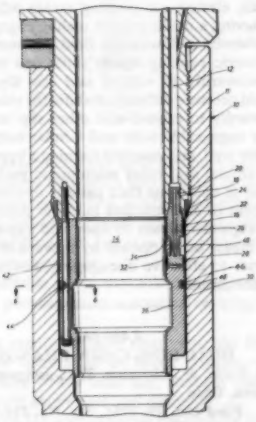
(e) causing said particulate material of said foam-particulate mixture to be retained in said annulus beginning at or substantially near the downhole end of said liner,
(f) moving said foam of said foam-particulate mixture upwardly through the inside of said liner and said well bore.

4,460,046

CONTROL FLUID COMMUNICATION NIPPLE

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Nov. 10, 1982, Ser. No. 440,667
Int. Cl.³ E21B *34/14*
U.S. Cl. 166—317 **14 Claims**



1. A communication nipple for communicating fluid flow from the outside of a well tool to the inside of the well tool through a fluid passageway in the well tool without the use of elastomer seals said fluid passageway extending to the inside of the well tool comprising,
a metal frangible member positioned entirely inside of the well tool and extending vertically into and blocking the

passageway, said metal member forming a metal seal at one end with the passageway and including a head, said member having a cavity exposed to the passageway, and

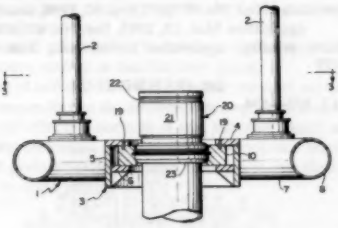
a vertically moving breaking sleeve positioned between said one end and the head of said member and adapted to break said member in tension and expose the cavity to the interior of the well tool when the sleeve is moved relative to the member.

4,460,047

LATERALLY RELEASABLE CONNECTOR BETWEEN OUTER WELL MEMBER AND TEMPLATE

Roger L. Pokladnik, Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Sep. 23, 1982, Ser. No. 422,092
Int. Cl.³ E21B *33/038*
U.S. Cl. 166—341 **6 Claims**



1. In an underwater well installation of the type comprising a rigid base structure secured to the floor of the body of water and defining the location for a well opening, the well including a borehole in which an outer well member is secured and extends upwardly at the location for the well opening, the combination of

a positioning structure rigidly secured to the base structure and defining both the well opening and an annular horizontally extending space which surrounds the well opening and opens toward the outer well member,

the positioning structure including an outer wall which extends completely around said annular horizontally extending space and defines the outer limits thereof;

a rigid annular member having an inner periphery which directly embraces the outer well member and also having an outer periphery which is directed away from the outer well member,

said rigid annular member being disposed within the annular horizontally extending space defined by the positioning structure with the inner periphery of the rigid annular member spaced inwardly from and concentric with the well opening and the outer periphery of the rigid annular member spaced inwardly from the outer wall of the positioning structure; and

releasable securing means interconnecting said rigid annular member and said positioning structure and securing said rigid annular member against lateral movement relative to the positioning structure,

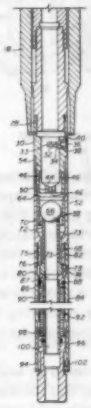
said securing means being constructed and arranged to release said rigid annular member for lateral movement relative to the rigid base structure in response to occurrence of a lateral force of predetermined magnitude applied to the rigid annular member by the outer well member, the excursion of such movement then being limited by said positioning structure.

4,460,048

PUMP THROUGH EQUALIZING CHECK VALVE FOR USE IN INTERMITTENT GAS LIFT WELL

Everett H. Smith, Houston, and Neil H. Akkerman, Kingwood, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Apr. 27, 1981, Ser. No. 258,208
Int. Cl.³ E21B *33/00*
U.S. Cl. 166—375 **11 Claims**

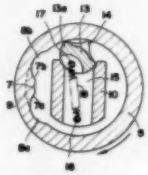


1. A valve apparatus carriable on a fluid transmission conduit, for use in a subterranean well employing the intermittent introduction of a gas for the purpose of lifting the produced fluid to the well surface, for allowing the flow of produced fluids from a reservoir into said fluid transmission conduit and thereafter to the well surface, and for allowing injected fluids to flow from said fluid transmission conduit into the reservoir, said valve apparatus comprising: an outer cylindrical body; upper and lower aligned axially extending central fluid passageways for allowing flow of produced fluids therethrough; a cylindrical valve seat positioned between said upper and lower central fluid passage ways, said cylindrical valve seat having a central flow passageway axially aligned with said upper and lower central fluid passageways; spherical means axially movable between said upper central fluid passageway and said cylindrical valve seat for closing said central flow passageway in said cylindrical valve seat when subjected to a greater pressure from above than from below said spherical means; a plurality of axially extending fluid passageways communicating with said central fluid passageways and disposed about a centrally disposed conical surface, said spherical means engaging said centrally disposed conical surface when subjected to a greater pressure below than above said spherical means, whereby fluid communication through said axially extending fluid passageway and said central fluid passageways, a port extending through said outer cylindrical body immediate said cylindrical valve seat for allowing the flow of injected fluids therethrough; sealing means between said cylindrical valve seat and said outer cylindrical body, for sealing said port; and biasing means for exerting a force acting on said cylindrical valve seat to seal said portion the presence of a resultant pressure force above said spherical means which is less than the force exerted by said biasing means.

4,460,049
IMPACT WRENCH

Ryoichi Shibata, Habikinoshi, Japan, assignor to Kabushiki Kaisha Kuken, Osaka, Japan

Filed Jan. 19, 1982, Ser. No. 340,669
Claims priority, application Japan, Jan. 27, 1981, 56-11088
Int. Cl.³ B25B *19/00*
U.S. Cl. 173—93.5 5 Claims



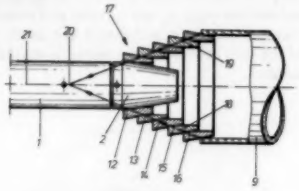
1. An impact wrench comprising
a casing,
driving means situated in said casing,
a cylindrical rotor rotationally disposed in said casing to be driven by said driving means, said rotor including a cylindrical inner surface, a recess extending radially outwardly from the inner surface of the rotor and partially around the circumference of the rotor in a plane orthogonal to the axis of the rotor, and a projection adjacent to said recess and radially inwardly extending beyond said cylindrical inner surface, said projection having round said portions at both sides thereof,
an anvil rotationally situated in said cylindrical rotor, said anvil having a slot thereon located inside said cylindrical rotor and a head outside said cylindrical rotor for transmitting power from said driving means outwardly.
a hammer pivotally disposed in the slot of the anvil, said hammer having a pair of side ridges extending substantially the entire length of said hammer and a top ridge between the side ridges so that when said hammer is tilted relative to the anvil, one of the side ridges and the top ridge contact the inner surface of the cylindrical rotor to thereby allow the cylindrical rotor to rotate freely relative to the hammer, and when the tilted hammer engages the round side portion of the projection of the cylindrical rotor, the hammer transmits rotation of the cylindrical rotor to the anvil, and
tension means situated between the anvil and the hammer to urge the top ridge of the hammer to orient radially outwardly of the cylindrical rotor so that when said top ridge of the hammer is located in the recess and extends on a radial line of said cylindrical rotor, said side ridges pass freely over the projection of the cylindrical rotor to thereby allow the cylindrical rotor to rotate without rotating the anvil.

4,460,050
PIPE DRIVING ATTACHMENT

Paul Schmidt, Winterberger Strasse, D-5940 Lennestadt 14, Fed. Rep. of Germany

Filed Mar. 24, 1982, Ser. No. 361,463
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112395
Int. Cl.³ B25D *17/08*
U.S. Cl. 173—128 4 Claims

1. An attachment for driving pipe comprising: a plurality of sleeves arranged to form a generally conical configuration, said plurality of sleeves having diminishing diameters arranged concentrically in driving engagement with each other and including a radially outermost and a radially innermost sleeve, said radially outermost sleeve being adapted to be engaged with the end of a pipe to be driven by said attachment; and a driving hammer in driving engagement with said radially innermost sleeve to impart a driving force to said pipe through

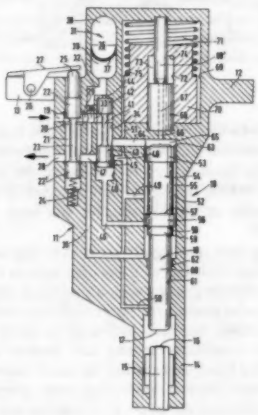


said plurality of sleeves in the axial direction of said pipe; and plurality of sleeves being arranged to form a stepped cone.

4,460,051
PERCUSSION DRILL HAMMER

Dieter Widmer, Uerikon, Switzerland, assignor to Spindel-, Motoren- und Maschinenfabrik AG, Uster, Switzerland

Continuation of Ser. No. 197,107, Sep. 30, 1980, abandoned. This application Mar. 28, 1983, Ser. No. 479,670
Claims priority, application Switzerland, Feb. 12, 1979, 1340/79
Int. Cl.³ B25D *17/24*
U.S. Cl. 173—134 4 Claims



1. A percussion drill hammer comprising:
a casing;
handle means secured to said casing;
a cylinder within said casing;
said cylinder comprising a pressure chamber;
a hammer piston mounted for reciprocating movement within said cylinder;
said hammer piston having a first effective surface facing the pressure chamber and a second effective surface facing away from the pressure chamber;
means for feeding periodic pressure pulses of a pressure fluid at a predetermined pulse frequency to said pressure chamber;
said periodic pressure pulses impinging on said first effective surface of said hammer piston for causing the latter to perform percussion strokes;
means for constantly feeding a pressure fluid at a constant pressure acting on said second effective surface of said hammer piston for causing the latter to return against the percussion strokes;

spring means having a spring constant;

said casing having mounted therein a balance mass body having a mass and a further chamber located within said balance mass body and between positioned between said balance mass body and the hammer piston;

said further chamber having an end face facing said pressure chamber;

said balance mass body being displaceable within said casing in a direction parallel but opposite to the movement of said hammer piston with respect to the position of the pressure chamber and against the action of the spring means supported in said casing;

said periodic pressure pulses impinging on the end face of said further chamber in said balance mass body in a direction opposite to that for the hammer piston;

said balance mass body and said spring means together defining an oscillatory system having a characteristic cyclic oscillation frequency;

said characteristic cyclic oscillation frequency being defined by the mass of the balance mass body and by the spring constant of the spring means;

said characteristic cyclic oscillation frequency being in the range from one half to one third of said predetermined pulse frequency;

said second effective surface being smaller than said first effective surface at said hammer piston;

the area of said end face of said further chamber substantially corresponding to the difference between said first and said second effective surfaces at said hammer piston; and

whereby the casing does not suffer a shock-like recoil when each periodic pressure pulse impinges in one direction on the hammer piston.

4,460,052

PREVENTION OF LOST CIRCULATION OF DRILLING MUDS

Judith Gockel, 15511 Baldswelle, Tomball, Tex. 77375

Filed Aug. 10, 1981, Ser. No. 291,261
Int. Cl.³ E21B *33/138*
U.S. Cl. 175—72 **10 Claims**

1. A method of stopping lost circulation of drilling fluid from a lost circulation zone in a formation penetrated by a well bore, which comprises

introducing into said lost circulation zone a slurry of a particulate expanded aggregate, consisting of expanded clay, expanded slate or expanded clay shale,

said expanded aggregate being present in said slurry in an amount effective to seal the openings or pores in said lost circulation zone.

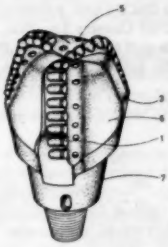
4,460,053

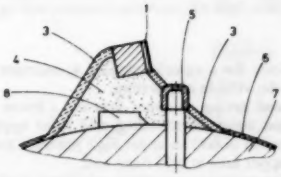
DRILL TOOL FOR DEEP WELLS

Rainer Jürgens, Altencelle, and Hermann Rathkamp, Celle, both of Fed. Rep. of Germany, assignors to Christensen, Inc., Salt Lake City, Utah

Filed Aug. 14, 1981, Ser. No. 292,778
Int. Cl.³ E21B *10/50*
U.S. Cl. 175—329 **12 Claims**

1. Rotary drill tool for deep well drilling, consisting of a steel connecting body which includes a threaded stud to connect with a drill bed or similar rotary drive, whose head is provided with cutting members and/or cutting coatings, which extend from the base region of the head to its central region, combined in row or strip-like protruding groups upon the external circumference and supported in a matrix bonding substance, characterized by the fact that the arrangement of the matrix bonding substance is confined with cutting members (1) and/or cutting coatings (2) in the region of the protruding strip or row-like groups, the matrix bonding substance (3) is formed as a layer and a space between the said layer and the





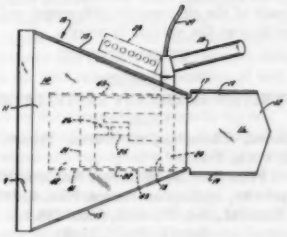
steel connecting body (7) is provided with a sintered steel filler.

4,460,054

METHOD AND APPARATUS FOR PORTION CONTROL

Mark S. Inkmann, 2808 N. 83rd, Milwaukee, Wis. 53222; Neil C. Karolek, 1506 N. Chicago Ave., South Milwaukee, Wis. 53172; John G. Reichard, N93 W15500 Hillside La., Menomonee Falls, Wis. 53051, and Donald A. Inkmann, 10436 W. Rae Ave., Milwaukee, Wis. 53225

Filed May 25, 1982, Ser. No. 381,835
Int. Cl.³ G01G *19/56, 23/10*
U.S. Cl. 177—149 **10 Claims**



1. In the method for providing portion control in the manual bagging of non-uniform bulk products comprising the steps of:

(a) inserting and maintaining an end of a bagging device within the mouth of a container;

(b) collecting a quantity of the bulk products on the opposite end of the bagging device;

(c) adjusting, if required, the quantity collected to visually approximate an established standard portion; and,

(d) discharging the collected bulk products into the container;

the improvement comprising the additional step of weighing dynamically the bulk products collected on the bagging device and the modified step of adjusting, if required, the quantity

collected to approximately equal the established standard portion based on actual measured weight.

4,460,055

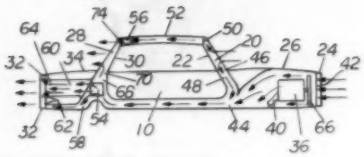
SYSTEM TO INCREASE VEHICLE FUEL EFFICIENCY

Karl Steiner, 2719 Country La., Erie, Pa. 16506

Continuation-in-part of Ser. No. 203,053, Nov. 3, 1980, Pat. No. 4,384,630. This application Mar. 14, 1983, Ser. No. 475,366

Int. Cl.³ B62D *35/00*

U.S. Cl. 180—7.1 **20 Claims**



16. A body for a vehicle adapted to increase the fuel efficiency of the vehicle comprising:

a front end having an upper area and a lower area,

projection means surrounding said front upper area being adapted to isolate an upper high pressure zone in front of said upper area at said front end,

projection means surrounding said front lower area being adapted to isolate a lower high pressure zone in front of said lower area at said front end,

a rear end having an upper area and a lower area,

projection means surrounding said rear upper area being adapted to isolate a low pressure zone behind said upper area of said rear end,

projection means surrounding said rear lower area being adapted to isolate a low pressure zone beind said lower area of said rear end,

first duct means connecting the lower high pressure zone at the front of said vehicle in fluid flow relation to the low pressure zone at the rear end of said vehicle,

second duct means connecting the upper high pressure zone at the front end of said vehicle in fluid flow relation to the low pressure zone at the rear end of said vehicle, whereby in said front zones the pressure is decreased and in said rear zones the pressure is increased thereby reducing the resistance of the air pressure differential and assisting the engine to urge the vehicle forward.

4,460,056

ENGINE-DRIVEN AUXILIARY SYSTEM FOR A MOTOR VEHICLE

Michel Jaccod, Champigny-sur-Marne, France, assignor to VALEO, Paris, France

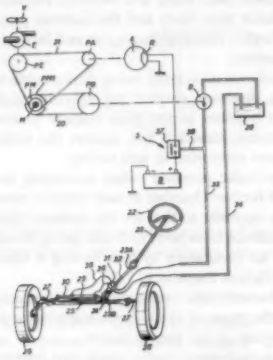
Filed Oct. 29, 1981, Ser. No. 316,319

Claims priority, application France, Nov. 4, 1980, 80 23507; European Pat. Off., Feb. 27, 1981, 81400305.9

Int. Cl.³ B60K *25/00*

U.S. Cl. 180—53.7 **4 Claims**

1. An engine-driven auxiliary system for a motor vehicle, comprising a vehicle engine, at least two auxiliaries which normally operate simultaneously, transmission means coupling said auxiliaries in rotation to said engine, said auxiliaries including a hierarchic group of auxiliaries with an order of operational priority in which at least one of the auxiliaries, referred to as the superior auxiliary, takes precedence over at least one other of the auxiliaries, referred to as the inferior auxiliary, further comprising at least one economiser element the state of which is variable concomitantly with the working conditions of the superior auxiliary, and which is adapted to put the inferior auxiliary at least partly out of action in response to the exceeding of a predetermined threshold in the working conditions of the superior auxiliary, so that the said transmission means are subjected to work which corresponds at most to a value lower than the sum of the maximum power consumption of the said auxiliaries, said superior auxiliary being an alternator, and an air-conditioning evaporator fan, said fan being adapted to be put into or out of action at the same time as the alternator is put into or out of action.



4,460,057

VEHICULAR FRAME STRUCTURE

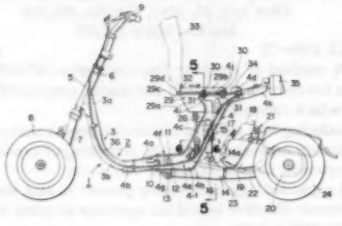
Mikihiro Kohyama, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1982, Ser. No. 400,469

Claims priority, application Japan, Jul. 24, 1981, 56-116919

Int. Cl.³ B62K *19/30*

U.S. Cl. 180—210 **17 Claims**



1. In a low-floor type, small-sized vehicle, a frame structure comprising:

a pair of right and left plate members extending substantially fore to aft of said vehicle;

each of said right and left plate members being provided at at least one of the upper and lower edges thereof with an outwardly bent flange portion;

a plurality of cross members rigidly connecting said plate members with each other;

each of said plate members comprising a substantially vertically extending intermediate portion, a front portion and a rear portion, said front portion and said rear portion extending substantially forwardly and rearwardly from the lower end and upper end, respectively, of said intermediate portion;

said vehicle being provided with a seat; and

said seat being substantially disposed on upper parts of said substantially vertically extending intermediate portions of said plate members.

4,460,058

BEARING ASSEMBLY FOR A WHEEL HUB DRIVEN BY A ROTARY CONSTANT VELOCITY UNIVERSAL JOINT

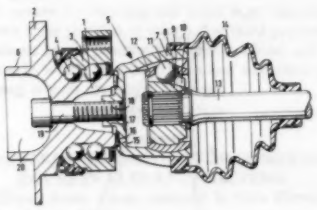
Hans-Heinrich Welschof, Rodenbach, and Rudolf Beier, Offenbach am Main, both of Fed. Rep. of Germany, assignors to Löhr & Bromkamp GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed Apr. 22, 1982, Ser. No. 371,004

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1981, 3116720

Int. Cl.³ B60K *17/22*

U.S. Cl. 180—258 4 Claims



1. An assembly for the hub of a wheel of a motor vehicle comprising:

wheel bearing means having an inner and an outer wheel bearing ring, said inner bearing ring being in driving connection with said wheel hub;

universal joint means for driving said wheel hub through said inner bearing ring, said universal joint means including an inner joint member and an outer joint member with said outer joint member being in driving connection with said inner bearing ring;

said wheel bearing means and said universal joint means being constructed as separate, self-contained structural units which can be connected together and separated from each other without requiring disassembly of each of said units;

centrally located bolt means extending in connecting engagment between said wheel hub and said outer joint member in threaded engagement therebetween and adapted to be threadedly tightened to bring said wheel bearing means and said universal joint means together in assembled relationship during assembly thereof;

an end face on said outer joint member arranged to axially face said inner bearing ring; and

gear teeth means including gear teeth on said end face interposed between said outer joint member and said inner bearing ring for connecting them in torque transmitting engagement with each other;

said gear teeth means consisting essentially of interengaging gear teeth having a flank angle of less than 20° which engage with each other without play in the circumferential direction and in the axial direction;

the flank angle of said gear teeth being selected in such a manner that the teeth are self-locking and that the load resulting from torque transmitted by said joint does not cause axial forces to act upon the bearing means.

4,460,059

METHOD AND SYSTEM FOR SEISMIC CONTINUOUS BIT POSITIONING

Lewis J. Katz, 3521 Westwood Dr., Salt Lake City, Utah 84109

Continuation of Ser. No. 001,079, Jan. 4, 1979, abandoned. This application Jul. 13, 1982, Ser. No. 397,890

Int. Cl.³ E21B *47/022*

U.S. Cl. 181—102 30 Claims

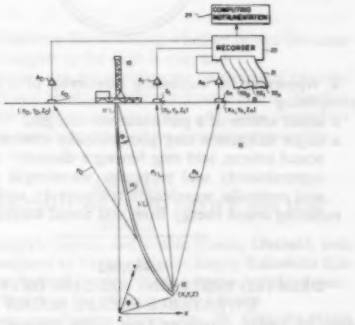
15. In a drill bit location system for a rotary drilling rig, said rotary drilling rig including a drill string and a drilling mechanism to rotate said drill string and an associated rotatable drill bit to drill a borehole, said drill bit location system including an array of spaced seismic detectors to detect seismic signals and signal processing means coupled to said seismic detectors for processing the seismic signals, a method for locating the position of said rotatable drill bit in the earth during continuous rotation of said rotatable drill bit in the borehole, said method comprising the steps of:

detecting a drill bit acoustic signal emanating from said rotatable drill bit during continuous rotation of said rotatable drill bit against the formation being drilled, the drill bit acoustic signal being detected by said array of seismic detectors;

positioning said array of seismic detectors to obtain phase differences in the drill bit acoustic signal detected at different seismic detector positions;

determining a set of assumed positions for said rotatable drill bit utilizing known information about the approximate depth of said drill bit;

calculating the travel times for the drill bit acoustic signal from one of the assumed positions for said rotatable drill



bit to each of said seismic detectors in said array of seismic detectors;

segregating the drill bit acoustic signal from other acoustic signals detected by said seismic detectors by (1) time shifting the acoustic signal detected by each of said seismic detectors relative to a time reference by an amount corresponding to the calculated travel time of the drill bit acoustic signal from said one assumed position to said seismic detector and (2) correlating the time shifted acoustic signals for said one assumed position of said rotatable drill bit by calculating a coherency value representing the coherency of the time shifted acoustic signals;

repeating the steps of calculating travel times of the drill bit acoustic signal and segregating the drill bit acoustic signal from other acoustic signals for each assumed position for said rotatable drill bit; and

comparing the coherency values for all assumed positions for said rotatable drill bit to determine the location of said rotatable drill bit.

4,460,060

VIBRATORY DIAPHRAGM FOR LOUDSPEAKER

Shigeru Hasumi, Otsu; Kazuo Tanaka, and Takashi Nishidoi, both of Shiga, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP81/00195, 371 Date Mar. 29, 1983, 102(e) Date Mar. 29, 1983, PCT Pub. No. WO83/00791, PCT Pub. Date Mar. 3, 1983

PCT Filed Aug. 27, 1981, Ser. No. 480,476

Claims priority, application Japan, Mar. 7, 1980, 55-27894

Int. Cl.³ G10K *13/00*; H04R *7/04, 7/10*

U.S. Cl. 181—169 20 Claims

1. A vibratory diaphragm for a loudspeaker made of com-

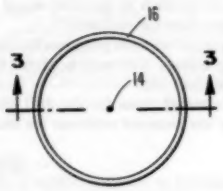
posite material composed of polyimide resin, graphite granules and fabric of high strength and high modulus filaments.

4,460,061

APPARATUS FOR INCREASING DIRECTIVITY OF A SOUND SOURCE

Robert J. Dodge, Houston, Tex., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 30, 1982, Ser. No. 413,019
Int. Cl.³ G10K *11/00*
U.S. Cl. 181—175 **7 Claims**



1. Apparatus for increasing directivity of a sound source comprising

a sound source of a particular wavelength,

a single diffraction ring geometrically centered about said sound source, said ring having a diameter and height of approximately said particular wavelength and one-half said particular wavelength respectively, said ring

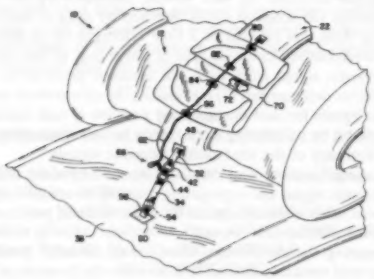
radiating sound energy from said sound source.

4,460,062

DELAYED RESTRAINT RELEASE DEVICE FOR INFLATABLE ESCAPE SLIDES

John M. Fisher, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,425
Int. Cl.³ A62B *1/20*; B65G *11/10*
U.S. Cl. 182—48 **4 Claims**



1. In an inflatable emergency evacuation slide, a delayed restraint release device comprising:

strap means comprised of a plurality of strap segments, said strap means coupling remote portions of said evacuation slide to preclude full deployment of said slide;

a cord having a first end attached to said slide and having a free second end, said cord being connected to said slide at an intermediate point along its length and having said free second end formed into a laced lanyard knot, said laced lanyard knot coupling strap segments of said strap means together at an intermediate point along said strap means; and

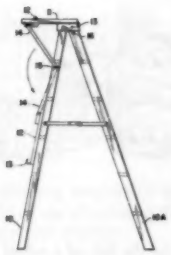
supplemental bag means associated with said cord and pneumatically coupled with said slide and inflatable with the inflation of said slide to extend said cord and unlace said lanyard knot and thereby permit full deployment of said slide.

4,460,063

STEP-LADDER WORK BENCH

Edwin I. Casada, 271 Salisbury Sq., Apt. 103, Louisville, Ky. 40207

Filed Apr. 12, 1982, Ser. No. 367,571
Int. Cl.³ E06C *7/14*
U.S. Cl. 182—116 **1 Claim**



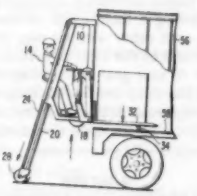
1. In combination with a step ladder comprising a top platform section, a step section attached to the front end of said top platform section and a prop section attached to the rear end of said top platform section, a work bench attachment comprising a shelf section, two elongated mounting arms pivotally attached at one end to said prop section and at their other end to one end of said shelf section, brace hook means attached to the bottom of said shelf section and having hook portions, extending downwardly and located at the opposite end of said shelf section and adapted to engage the front end of said top platform section when the work bench is in operative position with said shelf section resting on said top platform section.

4,460,064

FORKLIFT TRUCK CAPABLE OF RAISING AND LOWERING ITSELF AND A LOAD BACK AND FORTH BETWEEN TWO SURFACES AT DIFFERENT LEVELS

David W. Lutz, and David E. Lutz, both of P.O. Box 810, Carlisle, Pa. 17013

Filed Jun. 3, 1982, Ser. No. 384,549
Int. Cl.³ B60P *1/64*; B66F *9/075*; B62D *21/14*
U.S. Cl. 187—9 R **12 Claims**



1. A forklift truck capable of raising and lowering itself back and forth between two surfaces at different levels, said forklift truck comprising:

(a) a body;

(b) a first ground-engaging wheel mounted on said body;

(c) first means for driving said first ground-engaging wheel;

(d) a telescopable rear leg mounted on said body;

(e) second means for telescoping said rear leg;

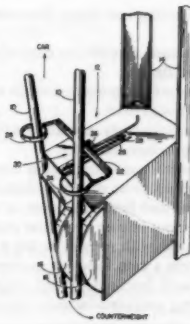
(f) a second ground-engaging wheel mounted on said rear leg;
(g) third means for driving said second ground-engaging wheel;
(h) a lift mast mounted on said body;
(i) a fork mounted on said lift mast;
(j) fourth means for moving said fork up and down on said lift mast;
(k) a pair of straddle front legs mounted on said body and movable between a work position in which they support the load and a carry position;
(l) a third ground-engaging wheel mounted on each of said front legs; and
(m) fifth means for moving said front legs back and forth between a use position in which said third ground-engaging wheels are in position to support a load and a carry position in which said front legs and said third ground-engaging wheels are out of the way.

4,460,065

ROPE SWAY WARNING DEVICE FOR COMPENSATING ROPES IN ELEVATOR SYSTEMS

Albert J. Saxer, Avon, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Aug. 20, 1982, Ser. No. 410,106
Int. Cl.³ B66B *5/12*
U.S. Cl. 187—29 R **6 Claims**



1. A compensating rope sway detection apparatus for attachment on a compensating rope sheave assembly in an elevator system and for electrical connection with the elevator system controller, characterized by:
a switch for providing an electrical connection to the controller, said switch having a movable switch actuating member and a stationary member,
a bracket to which the stationary member is attached for attaching the switch to the rope sheave assembly, the position of the switch on said bracket being adjustable, and
a loop which is attached to the movable member for encircling the rope, said loop being adapted to be opened to place the rope therein.

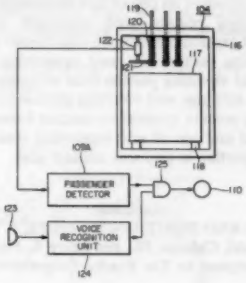
4,460,066

CRIME PREVENTION APPARATUS FOR ELEVATORS

Kazutoshi Ohta, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1983, Ser. No. 462,703
Claims priority, application Japan, Feb. 8, 1982, 57-18348; Feb. 8, 1982, 57-18349
Int. Cl.³ B66B *13/00, 5/00*
U.S. Cl. 187—29 R **12 Claims**

1. A crime prevention apparatus for controlling the operation of an elevator to reduce crimes in an elevator cage, comprising:
a crime prevention instructing unit automatically or manually operated at a predetermined time for commencing an operation for a crime prevention;



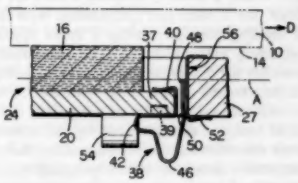
a passenger detector for detecting whether or not the number of passengers in the cage is one; and
a start instructing unit for enabling the operation of the cage only when said passenger detector detects that the number of passengers in the cage is one and said crime prevention instructing unit instructs a crime prevention operation.

4,460,067

PAD-WEAR-LIMIT WARNING DEVICE FOR DISC BRAKE

Masayoshi Katagiri, Toyota, and Toshio Kondo, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of Aichi, Japan

Filed Jan. 28, 1982, Ser. No. 343,476
Claims priority, application Japan, Feb. 20, 1981, 56-24484; May 30, 1981, 56-82708; May 30, 1981, 56-82709
Int. Cl.³ F16D *66/02*
U.S. Cl. 188—1.11 **16 Claims**



1. A device for warning of the allowable wear-limit of a pad assembly in a disc brake, in which said pad assembly includes a friction pad and a backing plate firmly attached to a backside of said friction pad and the backing plate is retained by a torque member for being urged into contact with a friction surface of a disc rotor so as to restrain rotation of said disc rotor, said device producing an alarming sound when said friction pad has been worn to a maximum allowable limit, said device comprising:
a vibration member including, a fixing portion secured to a lateral end portion of said backing plate, a spring portion formed into a curve as an extension from said fixing portion and located adjacent a rearside of said pad assembly, and a vibrating portion extending from said spring portion while passing through a gap formed between a lateral end portion of said backing plate and said torque member and extending towards the friction surface of said disc rotor such that an end of said vibrating portion is substantially located at a limiting position for wear of said friction pad,

said spring portion biasing said vibrating portion in a direction corresponding to the rotating direction of said disc rotor;

a supporting member supporting said vibrating portion at a root portion thereof against the biasing force of said spring portion; and

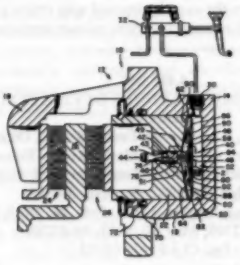
a projection disposed on one of said supporting member and said vibrating portion, said projection being located within said gap and defining the sole contact area between the vibrating portion and said supporting member for spacing said vibrating portion from said supporting member within said gap, said vibrating portion being biased by said spring portion to maintain contact between said projection and said one of said supporting member and said vibrating portion at said sole contact area.

4,460,068

DISC BRAKE AND POSITIONING DEVICE THEREFOR

Mark J. Cybulski, Chicago, Ill., and Larry A. Portolese, Granger, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 210,939, Nov. 28, 1980, abandoned.
This application Oct. 21, 1982, Ser. No. 435,811
Int. Cl.³ F16D *65/52*
U.S. Cl. 188—71.8 **3 Claims**



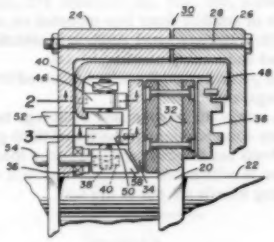
1. In a disc brake, a housing defining a bore for receiving a piston, at least one friction pad cooperating with the piston to move to a braking position during a brake application, the piston cooperating with the housing to substantially define a pressure chamber for receiving fluid pressure during the brake application, and means cooperating with the piston and the housing to limit retraction of the piston within the bore upon termination of braking, characterized by said means comprising a pressure responsive assembly carried by said piston, said pressure responsive assembly normally engaging said housing after termination of braking to establish a rest position for said piston, said pressure responsive assembly being operable solely in response to the fluid pressure within the pressure chamber reaching a predetermined value during the brake application to positively separate said means completely from said housing even if said piston fails to move during braking, said pressure responsive assembly being engageable with said housing during termination of braking when the fluid pressure within the pressure chamber is below the predetermined value to reestablish the rest position, said pressure responsive assembly including at least one leg engageable with said housing and a plug sealingly and movably engaging said piston, said plug being movable relative to said piston in response to the fluid pressure reaching the predetermined value to disengage said one leg from said housing, said pressure responsive assembly including a resilient member biasing said one leg into engagement with said housing and a pin connects said one leg and said resilient member with said plug, said one leg defining an oversized opening to receive said pin and said one leg is movable relative to said pin to move the latter from one side of said oversized opening to the other side.

4,460,069

CAM-ACTUATED DISC BRAKE

Elmo N. Boyles, 5453 Old Shell Rd., Apt. 154, Mobile, Ala. 36608

Filed Apr. 22, 1982, Ser. No. 370,985
Int. Cl.³ F16D *55/02*
U.S. Cl. 188—72.7 **2 Claims**



1. A cam-actuated disc brake, comprising:

(a) a brake disc mountable on an axle for rotation with and about the axis of said axle;

(b) first and second brake shoes mounted adjacent opposite faces of said disc;

(c) means for supporting said shoes for motion parallel to said axis;

(d) means for preventing said shoes from rotating with said disc;

(e) first camming means actuable to cam said first shoe into contact with said disc;

(f) second camming means actuable to cam said second shoe into contact with said disc;

(g) means for simultaneously actuating said first and said second camming means; and

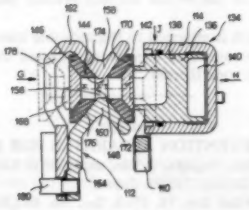
(h) said first and second camming means comprising respective first and second cams rigidly mounted on a common camshaft adjacent said first brake shoe, at least one of said first and second cams having a circular cross-section outer periphery eccentric with respect to the axis of said camshaft, and wherein a cam follower cooperating with said at least one of said first and second cams has a circular aperture receiving said circular outer periphery.

4,460,070

SPOT-TYPE BRAKE

Yves Meyer, Taverny, and Jean-Jacques Carré, Montreuil, both of France, assignors to Societe Anonyme DBA, Paris, France

Continuation of Ser. No. 244,497, Mar. 16, 1981, abandoned.
This application Jan. 28, 1983, Ser. No. 461,839
Claims priority, application France, May 6, 1980, 80 10089
Int. Cl.³ F16D *55/18, 65/20*
U.S. Cl. 188—73.1 **2 Claims**



1. A spot-type brake comprising a pair of friction elements cooperating with a movable support during braking to engage a rotor to be braked, the movable support being slidable rela-

tive to a fixed support, each of the pair of friction elements defining a profile in an axial section substantially the shape of a V whose bisectrix is substantially parallel to the axis of rotation for the rotor, characterized in that said rotor comprises a two-part assembly, the first part being engageable with radially outer portions of said pair of friction elements and the second part being engageable with radially inner portions of said pair of friction elements, said first and second parts forming a radial V for each part and an annular space therebetween, the radial V for said first part defining frusto conical surfaces approaching each other in a radially inward direction, the radial V for said second part defining frusto conical surfaces approaching each other in a radially outward direction, said movable support including connecting means extending into said annular space in order to engage one of said pair of friction elements and dispose the latter adjacent said first and second parts, and said fixed support extending through said annular space in order to oppose said one friction element.

4,460,071

DISC BRAKE FOR VEHICULAR USE

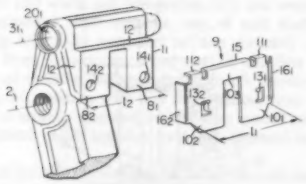
Masayuki Seki, Tateshina, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

Filed Jan. 15, 1982, Ser. No. 339,716

Claims priority, application Japan, Jan. 17, 1981, 56-5082[U]

Int. Cl.³ F16D 65/02

U.S. Cl. 188—73.39 **6 Claims**



1. In a disc brake for vehicular use of the type including a brake disc, a bracket having a pair of limbs and a pair of torque-bearing surfaces formed on the respective limbs in a common plane and firmly attachable to a body portion of the vehicle in straddling relation to the brake disc, a pair of friction pads on the opposite sides of the brake disc, a brake caliper connected to the bracket in straddling relation to the brake disc and carrying the friction pads with trailing end faces of the latter disposed facing the respective torque-bearing surfaces of the bracket, means on the brake caliper for pressing the friction pads against the opposite faces of the brake disc, and a single protecting plate mounted on the bracket to cover the torque-bearing surfaces of the bracket, and improvement comprising:

a detent shoulder on the bracket along the top edges of the torque-bearing surfaces thereof;

a pair of detent holes provided in the respective torque-bearing surfaces of the bracket;

upper detent lug means on the back of the protecting plate for engagement with said detent shoulder; and

lower detent lug means on the back of the protecting plate for engagement with said respective detent holes;

said upper and lower detent lug means being arranged to cooperatively hold the protecting plate in place on the bracket with resilient retention forces acting in two different directions substantially normal to each other,

said upper detent lug means including two detent lugs on the protecting plate at opposite ends of the top edge thereof extending rearwardly therefrom,

said lower detent lug means including a pair of lower detent lugs on the back of the protecting plate at locations corresponding to said respective detent holes in the torque-bearing surfaces of the bracket.

4,460,072

BRAKING MECHANISM FOR BRAKING THE CHAIN OF A PORTABLE POWER CHAIN SAW

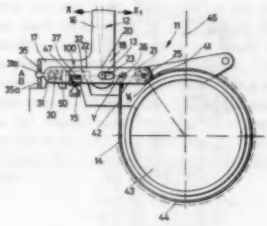
Bengt O. J. S. Mörner, Hovås, Sweden, and Peter Thomsen, Quickborn, Fed. Rep. of Germany, assignors to Firma Sachs Dolmar GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 282,604

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027221

Int. Cl.³ F16D 51/00; G05G 1/04

U.S. Cl. 188—77 R **5 Claims**



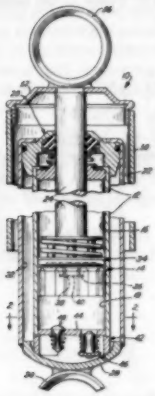
1. A braking mechanism for braking the chain of a portable power chain saw comprising a friction brake including a drum arranged to be connected to the driving sprocket of the chain and a brake band selectively engageable with said drum, said brake band having a pair of ends, a sensor which responds when a hazardous-state occurs and comprising a pivotable operating lever arranged to be mounted on a chain saw casing and said operating lever can come into contact with one hand of the saw operator in the case of a swinging movement of the saw and by the movement of said operating lever it is possible to operate said friction brake in operative connection with said operating lever, a lever-like device is connected to said operating lever, said lever-like device comprises a control lever having a first end and a second end, the two ends of said brake band are rotatably articulated to said first end of said control lever with said two ends of said brake band located in spaced relation on said first end of said control lever, stabilizing means in engagement with said control lever for maintaining said control lever in a stable initial position, and said control lever can be moved into an angular position with the simultaneous position change of the two brake band ends articulation points with respect to said brake drum and the application of the brake band to the brake drum, said operating lever pivoted in the casing of the chain saw includes a first control bolt in pivotal engagement with said control lever forming part of a toggle lever system so that said operating lever can be pivoted with said lever-like device, and the toggle lever system including said control lever and a release lever having a free end and an engagement end, a guide for holding the free end of said release lever, said control lever having an elongated hole and said first control bolt being guided in the elongated hole of said control lever, the engagement end of said release lever is rotatably fixed to said control lever at a distance from the points where the brake band ends are connected to said control lever and said control lever is connected to the release lever in such a way that in the inoperative position, the toggle lever system formed by the two levers is movable from an extended aligned lever position against said stabilizing means to a braking position in which the two levers are in an angular position relative to one another where a position change of the two connection points of the ends of the brake band to said control lever takes place.

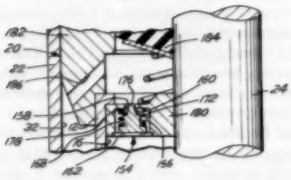
4,460,073

SHOCK ABSORBER WITH IMPROVED BACK CHECK AND ANTI-DUMP VALVE MECHANISMS

Paul Smeltzer, Napierville, Ill., assignor to Maremont Corporation, Carol Stream, Ill.

Division of Ser. No. 118,311, Feb. 4, 1980, Pat. No. 4,346,794.
This application Jun. 18, 1982, Ser. No. 389,596
Int. Cl.³ F16F 9/19
U.S. Cl. 188—322.13 2 Claims





1. A direct acting hydraulic shock absorber adapted to be connected between the sprung and unsprung masses of a vehicle comprising inner and outer tubular members, said inner tubular member defining a cylindrical chamber, a piston slidably mounted within said cylindrical chamber, a piston rod extending from one side of said piston outwardly from one end of said inner tubular member, closure means on said one end of said inner tubular member closing the one end of said outer tubular member and slidably sealingly engaging said piston rod, an end closure on the opposite end of said outer tubular member, connecting means for operatively connecting said shock absorber between said masses, hydraulic fluid filling rebound and compression spaces within said cylindrical chamber on the piston rod side of said piston and on the opposite side thereof respectively and partially filling an annular reservoir space between said inner and outer tubular members, said piston having a passage therethrough, rebound valve means in said piston disposed in cooperating relation with said passage, said piston having compression valve mechanism radially outwardly of said central passage to control flow, compression valve means between said compression space and reservoir space, and replenishing valve means between said compression space and said reservoir space, the improvement which comprises

means defining a parallel back check fluid flow path between said rebound space and said reservoir space and

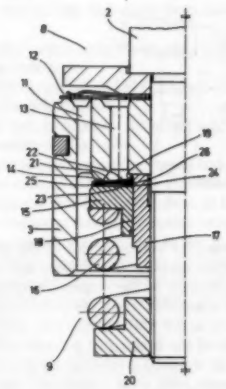
check valve means movably mounted within said flow path for movement from a first closed position generally closing said path, into an open position permitting fluid flow through said flow path in response to an initial increase in pressure in said rebound space occasioned by the initiation of a rebound stroke of said piston, and from said open position into a second closed position preventing further flow of fluid through said flow path in response to an increase in the pressure of the hydraulic fluid in said rebound space to a predetermined pressure above the initial increased level, said check valve means including means to progressively restrict flow through said path during a portion of the movement of said check valve means into said second closed position.

4,460,074

CONTINUOUSLY OPEN THROTTLING FLUID PASSAGE DEVICE FOR SHOCK ABSORBERS

Gerd Müller, Lälsfeld; Manfred Koller, Obbach, and Heinz Sydekum, Dittelbrunn, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jan. 6, 1982, Ser. No. 337,467
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1981, 3100886
Int. Cl.³ F16F 9/348
U.S. Cl. 188—322.14 21 Claims



1. In a continuously open, throttling fluid passage device for hydraulic shock absorbers comprising two annular concentric wall members substantially perpendicular with respect to their common axis, namely, a first and a second wall member which cooperate in defining an annular fluid passage chamber, said fluid passage chamber being connected by at least one first substantially axially directed opening of said first wall member to a first fluid chamber and being further connected by at least one second substantially radially directed opening to a second fluid chamber, said second opening being located radially outward of said first opening,

the improvement that the axial height of said fluid passage chamber substantially continuously decreases from the location of said first axially directed opening toward the location of said second radially outwardly directed opening,

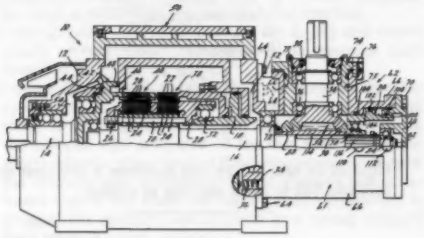
said first wall member contacts by its side remote from said fluid passage chamber a valve seat so as to define together with said valve seat an excess pressure valve, said excess pressure valve being opened, when the pressure in said first fluid chamber exceeds the pressure in said second fluid chamber by a predetermined amount.

4,460,075

REVERSING DRIVE UNIT

Gordon M. Sommer, Boca Raton, Fla., assignor to Sommer Co., Warren, Mich.

Filed May 24, 1982, Ser. No. 381,585
Int. Cl.[3] F16D 67/02, 19/00, 21/04; F16H 3/14
U.S. Cl. 192—18 A 6 Claims



5. A reversing drive unit driven by motor means rotatable to drive said unit in only one direction, comprising:

a first housing defining a central cavity between opposed longitudinally spaced end walls, one of said end walls having a plurality of circumferentially spaced, axially extending bores;

a main shaft extending coaxially through said opposed spaced end walls and comprising first and second coaxially arranged shaft sections, one of said shaft sections having an axially extended portion directed outwardly away from the associated end wall of said first housing;

a series of radially disposed clutch plates mounted in said cavity for rotation with said first shaft section;

a series of radially disposed brake plates spaced axially from said clutch plates and non-rotatably disposed in said cavity;

a series of friction discs mounted on said second shaft section for rotation therewith and adapted for selective frictional engagement with said clutch and brake plates;

clutch and brake actuating members located on axially opposite sides of said friction discs and movable axially of said shaft sections, with movement thereof in one direction serving simultaneously to frictionally engage said clutch plates with certain of said friction discs and to release the remaining friction discs from frictional engagement with said brake plates and with movement thereof in the other direction serving simultaneously to release said clutch plates from said frictional engagement with said certain friction discs and to frictionally engage said remaining friction discs with said brake plates;

a non-rotatable first piston member disposed in said first housing coaxial of said main shaft and movable between first and second positions for effecting axial movement of said actuating members;

spring means for locating in said plurality of circumferentially spaced, axially extending bores for urging said first piston member toward one of said positions;

a second housing encapsulating at least a portion of said extended portion of said main shaft and secured to said first housing, said second housing having at least one side wall and one end wall, an opening in said sidewall, and a second end portion disposed across said opening and secured to said sidewall;

a second shaft extending from a position interior to said second housing through said second end portion of said second housing, having gear means operably secured at the end of said second shaft disposed within said second housing;

first and second gear means slidably disposed coaxially with said extended shaft portion of said main shaft alternately engageable with said second shaft gear means;

double-sided, double acting non-rotatable annular second piston means disposed in said second housing coaxially of said extended shaft portion, and movable between a first position for effecting engagement of said first gear means with said second shaft gear means to rotate said second shaft in a first direction relative to rotation of said first and second shaft sections and a second position for effecting engagement of said second gear means with said second shaft gear means to rotate said second shaft in a second direction relative to rotation of said first and second shaft sections opposite to said first direction of rotation, said piston means comprising an annular piston member, an annular sleeve disposed around and slideable axially of said main shaft, means for guiding movement of said sleeve on said main shaft, means for transmitting forces from said main shaft to said sleeve, bearing means for rotatably supporting said main shaft disposed between said piston member and said sleeve, wherein said piston means is interrelated with said housing and said main shaft to provide a compact yet functional unit; and

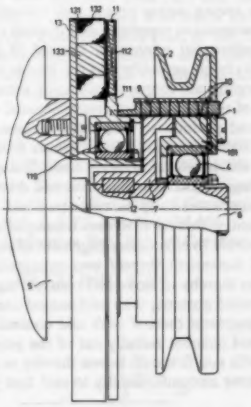
means for communicating a pressure media alternately to one side or the other of said annular second piston member to obtain the desired direction of rotation of said second shaft.

4,460,076

ELECTROMAGNETIC SPRING CLUTCH

Toshiaki Yamada, Higashiosaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 10, 1982, Ser. No. 376,497
Claims priority, application Japan, May 12, 1981, 56-70903
Int. Cl.[3] F16D 27/01, 27/10, 27/16
U.S. Cl. 192—35 10 Claims



1. An electromagnetic spring clutch comprising:

a stator having an electrically excitable winding;

a rotor fixed against axial movement and having a secondary induction conductor positioned in an electromagnetic induction coupling relation with respect to said winding, braking of rotation of said rotor being effected by exciting said stator winding;

a driving member rotatable coaxially with said rotor;

a driven member rotatable coaxially with said driving member; and

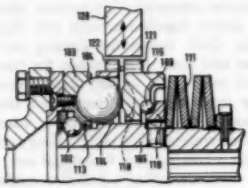
a coil spring fixed at one end to said rotor and at the other end to said driving member and having an intermediate part coaxially surrounding a cylindrical part of said driven member, said intermediate part normally being out of contact with said cylindrical part but being contractable into gripping engagement therewith to drive said driven member on relative twisting movement between said spring ends effectible by braking of said rotor.

4,460,077

OVERLOAD CLUTCH ASSEMBLY

Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Sep. 9, 1981, Ser. No. 300,596
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034606
Int. Cl.³ F16D 7/02
U.S. Cl. 192—56 R 7 Claims



1. An overload clutch assembly comprising: a driving member; a driven member; a plurality of torque transmission members operatively interposed between said driving and driven members; means on one of said driving and driven members defining a plurality of circumferentially spaced apertures for holding in operative position therein said plurality of torque transmission members; means on the other of said driving and driven members defining a first plurality of circumferentially spaced recesses adapted to engage therein said torque transmission members; a circumferentially movable control ring having formed therein a second plurality of circumferentially spaced recesses adapted to receive therein said torque transmission members; spring means urging said control ring against said torque transmission members; said control ring being operable by circumferential movement thereof to a first position to place said clutch assembly into the torque transmitting condition by urging said torque transmission members into said first plurality of recesses and by circumferential movement thereof to a second position to effect disengagement of said clutch assembly by engagement of said torque transmission members into said second plurality of recesses; first cam means on said control ring; second cam means on said driving member; and a control member radially movable into and out of position for engagement with said first cam means; said control member being operable to effect disengagement of said clutch assembly by radial movement thereof into engagement with said first cam means thereby to move said control ring circumferentially to said second position, with said second cam means operating upon engagement thereof with said control member to move said control member radially out of the position where it can engage with said first cam means thereby to allow said control ring to move circumferentially to said first position.

4,460,078

TORQUE RELEASE CLUTCH

Charles H. Heide, 5825 -6th Pl., Kenosha, Wis. 53142, and Edward S. Hanson, 3408 N. Green Bay Rd., Racine, Wis. 53404

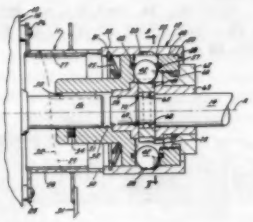
Filed Dec. 10, 1981, Ser. No. 329,249
Int. Cl.³ F16D 43/20, 43/21, 11/06, 7/02
U.S. Cl. 192—56 R 8 Claims

1. A clutch for use between a driving component and a driven component comprising:

a pair of relatively movable members;

at least one ball having one position wherein it is in force-transmitting relationship between said members and having another position wherein it is out of engagement with at least one of said members;

and an expansion ring mounted on one of said members and engageable with said ball, said ring being operable when relaxed to maintain said ball in said one position, said ring being further operable to expand and allow passage of said ball therethrough to said other position when the force



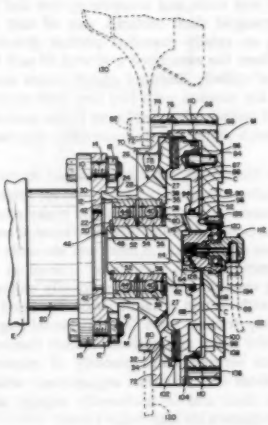
imposed on said ball by said members is sufficient to enable said ball to force said ring to expand.

4,460,079

MODULAR UNIT FOR USE WITH A FLUID ENGAGED SPRING RELEASED AND A SPRING ENGAGED FLUID RELEASED FAN CLUTCH

James V. Hanks, Minneapolis, Minn., assignor to Horton Industries, Inc., Minneapolis, Minn.

Filed Jun. 8, 1981, Ser. No. 271,631
Int. Cl.³ F16D 13/44, 25/063
U.S. Cl. 192—85 A 19 Claims



1. A modular unit for use with a fluid engaged spring released and a spring engaged fluid released fan clutch comprising, in combination:

(a) an outer hollow hub which terminates in

(b) a radially extending annular friction flange,

(c) means for mounting said outer hub on a live shaft,

(d) an inner central hub,

(e) means rotatably mounting an inner portion of said inner central hub within said outer hollow hub,

(f) said inner central hub terminating in an enlarged central portion which terminates in

(g) a radially disposed circular wall portion which terminates in a series of spaced right angular flanges,

(h) an annular piston having a first axial side and a second axial side,

(i) means mounting said annular piston on said enlarged central portion of said inner central hub,

(j) means securing a series of fan blades on said radially disposed circular wall,

(k) a friction facing ring carried by said piston,

(l) a source of fluid pressure,
(m) a first fluid passageway for fluid communication from the source of fluid pressure and the first axial side of said piston,
(n) a second fluid passageway for fluid communication from the source of fluid pressure and the second axial side of the piston,
(o) means for forming a cylinder void for moving the piston in a first axial direction on said inner central hub,
(p) spring means carried by said unit for urging said piston axially on said inner central hub in the opposite axial direction, and
(q) means for plugging the first fluid passageway when the cylinder void is located on the second axial side of the piston or for plugging the second fluid passageway when the cylinder void is located on the first axial side of the piston wherein when the first fluid passageway is plugged the modular unit operates as a fluid engaged spring released clutch and when the second fluid passageway is plugged the modular unit operates as a spring engaged fluid released clutch.

4,460,080

COIN VALIDATION APPARATUS

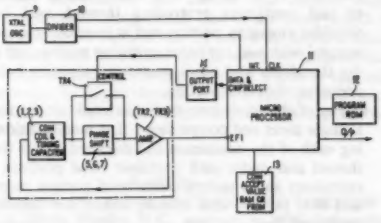
George R. Howard, Wimborne, England, assignor to Aeronautical & General Instruments Limited, Croydon, England

Filed Mar. 4, 1982, Ser. No. 354,694

Claims priority, application United Kingdom, Mar. 19, 1981, 8108625

Int. Cl.³ G07D *5/08*

U.S. Cl. 194—100 A **13 Claims**



1. A method of validating a coin comprising providing only a single feedback oscillator having a tuned electrical coil permanently connected in its feedback loop, positioning a coin adjacent said electrical coil, operating said single feedback oscillator and monitoring its frequency, selectively including a phase shifting network in said feedback loop of said single feedback oscillator, operating said single feedback oscillator and monitoring its frequency when said phase shifting network is included in its feedback loop, deriving from said monitored frequencies two parameter signals characteristic of the effect of said coin on the inductance and loss factor of said coil, and comparing said two parameter signals with reference values to determine if said coin is valid.

4,460,081

MACHINE ASSEMBLY COMPRISING A MACHINE TOOL AND MEANS FEEDING WORK THERETO

Gerhard Stark, Beethovenstrasse 21, 7312 Notzingen, and Günther Blum, Ravensburg, both of Fed. Rep. of Germany, assignors to Gerhard Stark, Notzingen, Fed. Rep. of Germany

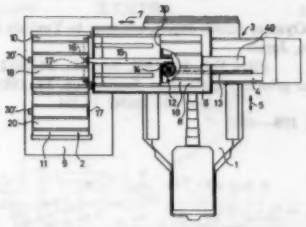
Filed Dec. 18, 1981, Ser. No. 332,354

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101765

Int. Cl.³ B65G *43/00*

U.S. Cl. 198—341 **11 Claims**

1. In a machine assembly comprising a machine tool having a machining table for presenting work to said tool, said machining table comprising a base table reciprocably movable in the Y-direction and a co-ordinating table movable on said base table in the X-direction, the movements of said base table and said co-ordinating table being governed by an NC-control system, said assembly further comprising means for feeding work to said machine tool, the improvement wherein a base table part is arranged on the co-ordinating table immovable relatively to the latter, work feeding means are provided in the form of pallets on a base frame adjacent said machine tool and are movable to and from said base frame or said co-ordinating table in correlation with the movement of the base table relatively to the co-ordinating table, when located on the co-



ordinating table the pallet is in horizontal alignment and abutting relationship with said bast table part, at least two of said pallets have surfaces which are at the same height as the surface of said base table part and together with the surface of said base table part form machining surfaces, at least the machining surfaces of the pallets are uniplanar, and said base table, said co-ordinating table with said base table part and one of said pallets are connected to one another selectively by the NC-control system through a positive drive gear, so that the movement of the pallet is carried out positively under the action of movement of said coordinating table or said base table.

4,460,082

APPARATUS FOR ALIGNING CHIPS DURING THE MANUFACTURE OF STRANDBOARDS

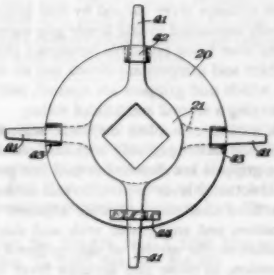
Wolfgang H. Bürkner, Darmstadt, Fed. Rep. of Germany, assignor to Carl Schenck AG., Fed. Rep. of Germany

Filed Sep. 2, 1982, Ser. No. 414,442

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1981, 3138462

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—382 **6 Claims**



1. Apparatus for aligning chips in the production of chipboards into a preferred direction by means of vertical aligning plates arranged parallel at a distance from and adjacent to each other with rotating shafts arranged above the aligning plates perpendicular to the preferred direction parallel and at a distance from and adjacent to each other on which spacing discs, spiked discs, solid discs and spiked discs are arranged alter-

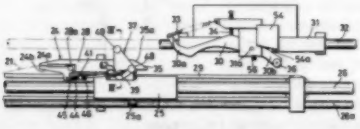
nately in the same sequence, characterized in that each solid disc carries mountings for spikes of the spiked discs on at least one face thereof and at an angular distance of 180° apart.

4,460,083

FEED MECHANISM FOR ELONGATE FLEXIBLE ARTICLE

Yoshio Oyama, Asahi, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Feb. 11, 1982, Ser. No. 347,932
Claims priority, application Japan, Feb. 12, 1981, 56-19976
Int. Cl.³ B65G 25/04
U.S. Cl. 198—486 5 Claims



1. A feed mechanism for an elongate flexible article comprising:

(a) a pair of parallel grippers for gripping the article on a pair of laterally spaced leading end portions thereof, said grippers being reciprocable between a first position and a second position disposed away from said first position for advancing the article along a longitudinal path;

(b) means for supporting said grippers, said supporting means including a first rail extending parallel to said longitudinal path, and a slide slidably mounted on said first rail for movement therealong, said grippers being mounted on said slide ;

(c) each of said grippers including a pair of coacting upper and lower grip members, such two upper grip members projecting from a common first base fixed to said slide, such two lower grip members being pivotally mounted on said first base;

(d) means operative on said grippers for closing said grippers at said first position and for opening said grippers at said second position, said closing and opening means including:

(1) an actuator lever carried by said grippers and operatively connected to said lower grip members, said actuator lever being pivotable between a closing position in which said grippers are closed and an opening position in which said grippers are opened, said actuator lever carrying a second and a third roller;

(2) a second cam plate disposed adjacent to said first position and engageable with said second roller, when the grippers are disposed at said first position, to cause said actuator lever to pivot to said closing position; and

(3) a third cam plate disposed adjacent to said second position and engageable with said third roller, in response to the arrival of said grippers at said second position, to cause said actuator lever to pivot to said opening position; and

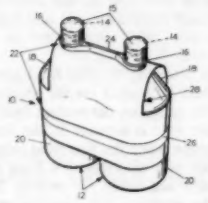
(e) a removal lever disposed adjacent to said second position and having a first and a second leg, said removal lever being pivotable, in response to the arrival of said grippers at said second position, to cause said first leg to project through a space between said pair of grippers for kicking down the article from said grippers while the latter are opened.

4,460,084

PLURAL CONTAINER PACKAGE

John L. Miller, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 13, 1982, Ser. No. 417,016
Int. Cl.³ B65D 71/06, 75/00, 25/22
U.S. Cl. 206—158 9 Claims



1. A plural container package for securing together a plurality of identical containers, each said container having an open neck finish, an outstanding bead portion disposed below said finish portion, an angled shoulder portion disposed below said bead portions and an elongate, hollow, enlarged diameter closed bottom, main body portion in communication with said finish opening, said package comprising:

a plurality of said containers in a regular geometric array,

a cover shroud overlying each said container of said array including a container shoulder engaging portion having a plurality of container receiving apertures in registry with said array of containers, with said container bead portions of said containers protruding through said container shoulder engaging portion and at least one panel portion integral with said container engaging portion and depending therefrom said panel portion terminating below said container shoulder portion,

a carrier of elastic, thermoplastic material initially formed in a single sheet and comprising a first inner portion engaging each of the containers and disposed above the cover shroud and under said container bead portions of said containers and a second outer band portion surrounding said first portion and initially connected thereto along weakened lines,

said cover shroud being formed from paperboard as a die cut blank and being initially positioned above the containers in proper registry therewith such that the cover shroud is lowered onto the container array and forced downwardly by installation of the carrier and such that as the second band portion of the carrier is severed from the first portion along the weakened lines, the band portion forces said panel portions along the main body portions of the containers and is stretched about the panel portions.

4,460,085

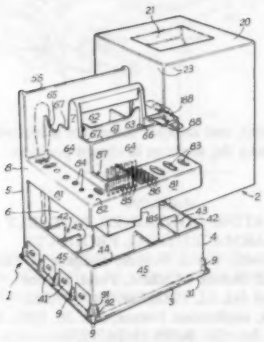
PORTABLE TOOL-CHEST

Eric Jantzen, 38 Avenue Thierry, Ville d'Avray, France 92410

Filed Aug. 26, 1982, Ser. No. 411,643
Claims priority, application France, Sep. 10, 1981, 81 17168
Int. Cl.³ A45C 11/26
U.S. Cl. 206—349 14 Claims

1. Portable tool chest comprising a rigid frame equipped with a flat base, means to hold a variety of tools and spare parts, and a handle situated at the upper part of the frame, with a removable rigid lid adapted to cover entirely the frame, wherein the frame comprises a vertical central well constituted by at least one deep storage compartment extending over nearly the whole height of the frame, a base receptacle comprising storage compartments of smaller height placed at the base of the frame around the central well, at least one level of tool suspensions around the central well above the base receptacle, at least one vertical panel comprising an outer face form-

ing a rack limited by an upper horizontal edge and two vertical comparatively short side walls defining two vertical edges on the external part of the frame and lid-guiding means situated on the periphery of the base receptacle and/or of the tool suspension level, and wherein said vertical central well is topped by said handle, the lid is designed to fit over the said guiding means and said two edges and said upper horizontal edge of said at least one vertical panel, the said lid having a flat horizontal upper face provided in its center with a recessed portion and an opening to allow the passage and housing-in of the



frame handle underneath said flat upper face when the lid is placed over the frame, said flat upper face of said lid being generally coextensive with the frame base to provide enclosed storage space surrounding said handle, said vertical panel forming a rack constituting a back face of the frame which is parallel to one of the faces of the lid when the latter is fitted over the frame and forms one of the walls of said vertical central well, and said lid having a height which is approximately between the largest dimension of the flat base and twice said dimension whereby said tool chest presents a higher than wide configuration.

4,460,086

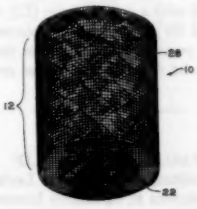
TUBULAR GLASS FIBER PACKAGE AND METHOD

Richard A. Davis, Shelby, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 1, 1979, Ser. No. 80,886

Int. Cl.³ B65D *85/02*; B65H *55/02*

U.S. Cl. 206—389 **24 Claims**



1. A tubular package of continuous sized glass fiber strand or strands having a substantially cylindrical shape, comprising:

(a) continuous glass fiber strand or strands wound into superimposed annular layers,

(b) exterior fiberous net,

(c) more than one strip of adhesive on the exterior surface of the net so as to allow only a portion of the adhesive to contact the glass fibers to provide minimal adhesive support to at least the external peripheral surface of the superimposed annular layers of glass fiber strand or strands, so that the glass fiber strand or strands can be removed from the package from the inside to the outside of the package with a reduced tendency for the package to collapse as the strand or strands are being removed, and with good strand payout and with minimal strand fuzzing.

4,460,087

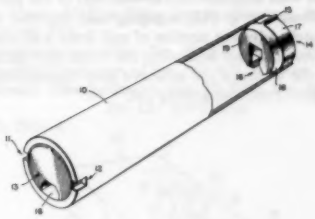
CORE PLUG

Richard E. DeMarco, Waldwick, N.J.; David Hopkins, Wilton, Conn., and Walter D. McVicar, Bedford Village, N.Y., assignors to Westvaco Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,271

Int. Cl.³ B65D *39/00*

U.S. Cl. 206—415 **4 Claims**



1. A single ridge core plug for reinforcing and preventing damage to the ends of hollow, tubular cores having varying internal diameters within a given nominal size and on which webs of paper, plastic, fabric and other material may be wound, said core plug comprising, a solid elongated cylindrical body formed from wood, plastic or a composite woody material having sufficient strength to absorb the impact shocks and crushing loads experienced by the core ends during handling and shipping said cylindrical body having an outside diameter substantially equal to the inside diameter of the smallest core expected to be encountered within a given nominal size, an integral tapered forward portion for facilitating entry of the core plug into the core, a single tapered ridge element located on the outer peripheral surface of said cylindrical body extending from the forward portion of the core plug along the elongated axis to the rear thereof and having a height sufficient to permit the core plug to fit snugly into the largest core expected to be encountered within a given nominal size, and means for removing the core plug from the cores after shipment, said means comprising a core plug removal opening extending the full length thereof and having a size adapted to accommodate a core plug removal tool, a recessed area at the forward end of said core plug adjacent to the core plug removal opening and a ramped surface connecting said core plug removal opening with said recessed area.

4,460,088

SOFT PACK CONSISTING OF A PLASTIC FILM, ESPECIALLY FOR PAPER HANDKERCHIEFS

Rolf K. A. Rugenstein; Dieter Brahmst, and Wolfgang Lippert, all of Bremen, Fed. Rep. of Germany, assignors to Christian Senning Verpackungsautomaten, Bremen, Fed. Rep. of Germany

Continuation of Ser. No. 204,670, Nov. 5, 1980. This application Jun. 22, 1983, Ser. No. 506,852

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1979, 2949496

Int. Cl.³ B65D *27/34, 27/36*

U.S. Cl. 206—494 **4 Claims**

1. A soft dispenser package of plastic film for accommodating disposable cellulose paper handkerchiefs, said package having a generally parallelepiped configuration including a front wall, a rear wall, opposed side walls and opposed end walls, at least one perforation line defined in at least one of said

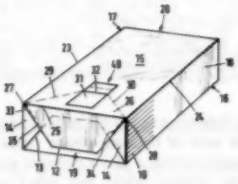
walls to implement the tear opening of the package, and an adhesive strip connected at its respective ends to adjacent wall portions of said package on opposite sides of said perforation line, characterized by:

(a) two generally converging perforation lines (29, 30) jointly defining a boundary of a tear open flap (26) on the front wall (15) of said package,

(b) a transversely directed, continuous separating cut (32) in said front wall delimiting a finger grippable end (31) of said flap,

(c) opposite ends of said separating cut directly joining with converging ends of said perforation lines at an angle such that upon pulling an end of said adhesive strip upwardly to initially open the package, tearing force is directed along said perforation lines toward opposite corners (27, 28) of the front wall adjacent an end wall (19) of the package,

(d) the adhesive strip (40) engaging said flap end and an immediately adjacent portion of said front wall and sealingly overlying said separating cut when said package is closed, the width of the adhesive strip corresponding to the length of the speparating cut,



(e) diverging ends of the perforation lines extending outwardly to said opposite corners (27, 28) of the front wall adjacent said end wall (19) of the package,

(f) connecting perforation lines (33, 34) further defining said flap in said end wall and continuing from said perforation lines at said corners, and

(g) the adhesive strip having a non-adhesive grip tab (43) on its end engaging said front wall, whereby upon opening said flap exposes a full width portion of said front wall together with a full width portion of said end wall, to thereby enable the easy removal of individual handkerchiefs from the package, wherein

(h) the end wall (19) is formed, in sequence, by folding in opposite first and second flaps (14) adjoining the side wall, a third flap (13) adjoining the rear wall, and a fourth trapezoidal flap (12) adjoining the front wall,

(i) the connecting perforation lines in the end wall are provided in the first and second flaps and run along lateral folded edges (35) of the fourth flap, and

(j) a plurality of paper handkerchiefs arranged in a stack in the package with end folds (44)thereof directed towards the opening formed by the tear flap to facilitate seizing the handkerchiefs when removing them.

4,460,089

PROTECTIVE CASE FOR A SECOND STAGE BREATHING APPARATUS

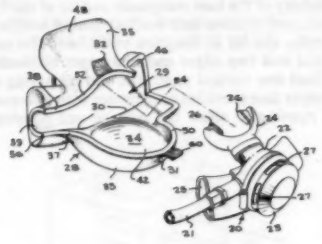
Keith Abbott, 2029 #1803, Park Pl., Bedford, Tex. 76021

Filed Jun. 14, 1982, Ser. No. 388,039

Int. Cl.³ A62B *7/00;* **B63C** *11/16;* **A45C** *11/00;* **B65D** *85/00*

U.S. Cl. 206—527 **18 Claims**

1. As a new article of manufacture, a protective case for a second stage breathing apparatus, such case being made of yieldable material and comprising a body member including first and second sections joined together by a hinge portion, flange portions on certain of said second sections, and said flange portions abutting each other when the sections are closed together, there being a recess in one side of the case for the projection therethrough of a hose of a second stage breathing apparatus, there being recessed areas within said first and second sections for receiving the components of a second stage



breathing apparatus, and fastener means for selectively retaining and maintaining the sections in closed position.

4,460,090

COMPENSATING CONTAINER, NOTABLY FOR PHARMACEUTICAL PRODUCTS

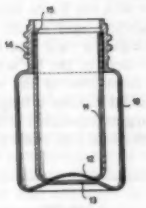
Jean-Claude Paoletti, Enval, France, assignor to Laboratoires Merck Sharp & Dohme - Chibret, Paris, France

Filed Jul. 12, 1982, Ser. No. 397,252

Claims priority, application France, Jul. 20, 1981, 81 14084

Int. Cl.³ B65D *85/56, 77/04*

U.S. Cl. 206—540 **1 Claim**



1. A container of the type intended for solid contents, characterized in that it comprises on the one hand an external, rigid envelope, (10), having an opening which is capable of being sealed by a lid, and on the other hand, an internal envelope, (11), enclosing the solid contents and completely positioned inside the external envelope, said internal envelope being cylindrical and provided with a convex base, (12), which is capable of being deformed by increasing in volume sufficiently to absorb the surplus pressure resulting from the packing of the contents when the lid is applied, without crushing the solid contents.

4,460,091

BAG RESEALING CLIP

Paul O. Hain, Hamilton, and J. George Lepisto, Middletown, both of Ohio, assignors to Champion International Corporation, Stamford, Conn.

Filed Sep. 1, 1982, Ser. No. 413,972

Int. Cl.³ B65D *33/20, 33/30*

U.S. Cl. 206—621 **8 Claims**

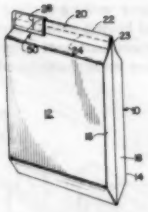
1. A resealable bag for containing a flowable product, which comprises

a plurality of panels hingedly coupled along fold lines;

an opening at one end of the bag;

a flap hingedly coupled to one of said panels along a fold line for overlapping a portion of an opposite panel and closing said opening, said flap having a free, distal edge remote from said fold line;

a resealable clip comprising an elongated, unitary member formed of a resilient plastic, said member being generally U-shaped in transverse cross section with two generally parallel legs joined at adjacent ends thereof by a curved bight, said clip being removably mounted on the bag with said bight overlying said flap fold line, one of said legs overlying said one panel and the other of said legs overlying said flap such that said legs press said flap against said opposite panel to seal the bag;



an adhesive layer formed on and extending across the entire width of said flap for adhering said flap to said opposite panel to seal said opening;

and

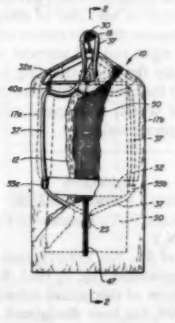
a spot coating of abhesive means formed on said opposite panel for partially reducing, but not eliminating, the adhesive bonding strength of said adhesive layer on a first section thereof adjacent one corner of said bag to facilitate opening of said flap, while maintaining a seal at said first section prior to opening.

4,460,092

FUR SECURITY SYSTEM

Michaelina Lee, Santa Monica, Calif., assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,247
Int. Cl.³ A47F 7/19
U.S. Cl. 211—4 **9 Claims**



1. A system for locking a sleeved garment to a horizontal pole comprising:

a hanger having an open loop portion for supporting said hanger from said pole, and opposed shoulder confronting portions;

a chain having ends and being of sufficient length so that the chain ends may be passed over said pole, outwardly to the ends of said shoulder confronting portions, downwardly through the sleeves of said garment, and inwardly towards each other;

releasable means for supporting said chain from points near the outer ends of said shoulder confronting portions to keep said chain spaced at the upper ends of said sleeves;

a garment bag for enclosing said garment supported on said hanger;

chain spacing means associated with said garment bag for spacing said chain apart at the lower ends of said sleeves so that portions of said chain passing through said sleeves are disposed substantially vertically within said sleeves; and

means for locking the ends of said chain together to form a closed loop extending over said pole and through said sleeves.

4,460,093

SECURITY DEVICE

Martin Otema, 51 Pine Ridge Dr., Scarborough, Ontario, Canada M1M 2X6

Continuation-in-part of Ser. No. 291,877, Aug. 11, 1981, which is a continuation-in-part of Ser. No. 179,797, Aug. 20, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 426,479
Int. Cl.³ A47F 5/00
U.S. Cl. 211—4 **9 Claims**

1. A security device comprising:

a plurality of flexible elongate elements each adapted to retain at least one article to be secured;

an anchor member for said flexible elements, said member being adapted to be secured in a fixed position and including an elongate undercut slot extending longitudinally of the member;

said flexible elements having first end portions serially disposed in said slot, with the remainder of each element extending outwardly from said member and being of a length sufficient to permit the articles to be individually manipulated with respect to said member while remaining secured thereto by said elements, each said flexible element having an enlargement at its first end and said slot being dimensioned to permit free sliding movement of the flexible elements along the slot while preventing movement of the enlargements through the slot, said anchor member further including a release opening which communicates with said slot and which is of a size sufficient to permit movement of any of said enlargements therethrough so that the associated elongate element can be released from the anchor member;

lock means coupled to said anchor member and including a lock member moveable between a locking position in which the member prevents movement of said elements from said slot to said release opening, and a release position permitting such movement of the elongate elements, said lock means being releasable to permit movement of said lock member to said release position when authorized removal of articles is to be permitted;

and wherein at least one of said flexible elements further includes an article securing member retained on the element adjacent a second end thereof, said member defining an opening through which said enlargement at the first end of the member can pass when the element has been released from the anchor member to form a loop in said

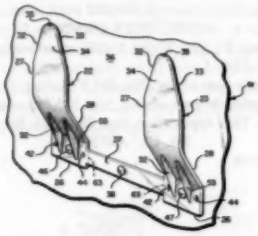
element, whereby the element can be used selectively in a looped or unlooped configuration for retaining an article, said opening defining a narrow generally parallel-sided recess dimensioned to permit a portion of said element to be frictionally retained in said recess.

4,460,094

ARTICLE HOLDING DEVICE

Edmund R. Schoen, 1662 Rampart Rd., Addison, Ill. 60101

Filed Mar. 24, 1983, Ser. No. 478,465
Int. Cl.³ A47F 7/08
U.S. Cl. 211—35 **7 Claims**



1. A device for supporting and storing small articles, such as at least one shoe, or the like, on a generally vertical surface, such as the facing side of a vertical wall or door, said device comprising at least one elongated support member adapted to be secured to said vertical surface in an upright position, each support member including a mounting portion adapted to be secured to said vertical surface, a retaining portion spaced above and horizontally offset from said mounting portion, and a connecting portion connecting said mounting and retaining portions, at least one longitudinally extending reinforcing rib extending between the connecting and retaining portions of said support member on the side thereof which faces said vertical portion, said mounting, retaining and support portions and said rib being integrally formed by a molding process, whereby an article may be supported by and stored on said device by engaging a portion of the article with at least the connecting portion of the device when the latter is mounted on said vertical surface.

4,460,095

MOLDED RACK

Ronald N. Kessler, Youngstown, Ohio; June S. Rose, 1040 Colonial Dr., Youngstown, Ohio 44505, and Myron E. Ullman, Jr., Canfield, Ohio, assignors to Willow Molded Plastics, Inc. and June S. Rose, both of Youngstown, Ohio

Filed Dec. 17, 1981, Ser. No. 331,563
Int. Cl.³ A47F 7/00
U.S. Cl. 211—69.1 **12 Claims**

1. A free-standing one-piece rack formed from molded plastics material, comprising:

(a) left, center and right upstanding support walls having lower portions extending in a common plane for supporting the rack in a free-standing manner atop a flat surface, each of said support walls being substantially flat, and all of the support walls extending in spaced, parallel planes;

(b) a first front wall interconnecting the left and center support walls, and a second front wall interconnecting the right and center support walls, said first and second front walls extending in a common plane which extends perpendicular to the spaced, parallel planes of the support walls;

(c) a base wall interconnecting the left, center and right support walls;

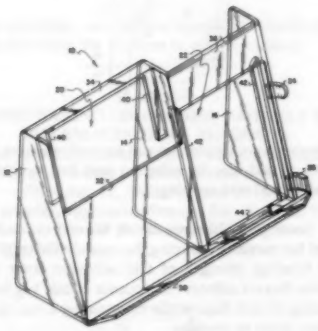
(d) formation means carried by a selected one of the right and left support walls and cooperating with a portion of the base wall to define an upstanding holder for receiving and supporting an elongate writing instrument;

(e) the left and center support walls defining opposite sides of a first compartment;

(f) the right and center support walls defining opposite sides of a second compartment;

(g) one of the first and second compartments being configured to receive a booklet, and having first support means extending into said one compartment to provide back support for a booklet positioned therein;

(h) the other of the first and second compartments being configured to receive writing surface means providing a writing surface and having second support means extending into said other compartment to provide back support for a writing surface means positioned therein;



(i) at least parts of the first and second front walls, the formation means, the first support means and the second support means being configured and oriented with respect to the common plane of the first and second front walls such that their frontward-facing surface portions may be formed by one of a pair of mold halves which are arranged to move relative to each other during opening and closing along a path of travel which extends perpendicular to the common plane of the first and second front walls, and such that their rearward-facing surface portions may be formed in toto by the other of said pair of mold halves; and,

(j) a top wall interconnecting the center support wall with at least one of the right and left support walls, the top wall being substantially flat and extending in a plane which is perpendicular to the common plane of the first and second front walls, and which is perpendicular to the parallel planes of the support walls.

4,460,096

SHELF ORGANIZER

Albert A. Ricci, Yonkers, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 198,571, Oct. 20, 1980, Pat. No. 4,364,481. This application Sep. 4, 1981, Ser. No. 299,449
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.³ B01B 23/00
U.S. Cl. 211—184 **7 Claims**

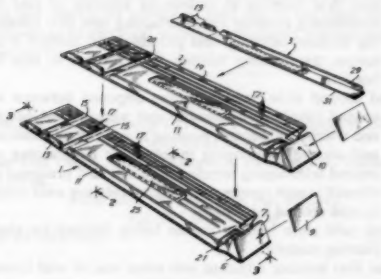
1. A variable shelf organizer adapted to being assembled to give shelf organizers of different overall horizontal dimensions as well as product troughs of various lengths comprising:

(a) at least one regular organizer unit having front and rear ends and at least one end strip having front and rear ends;

(b) said regular organizer unit comprising a longitudinally extending product supporting member provided with a first barrier member extending upwardly from said product supporting member adjacent a lateral margin thereof, said product supporting member also being provided with a plurality

of longitudinally extending grooves any one of which is adapted to engage a barrier member of a similar adjacent organizer unit, said barrier member being provided with means for engaging any one of the longitudinal grooves in said product supporting member whereby the product supporting troughs of variable widths may be formed;

(c) said product supporting member also being provided toward its rear end with a plurality of horizontally extending spaced grooves, said horizontally spaced grooves being adapted to be cut or broken along their extensions whereby



the length of said product supporting member may be varied; and

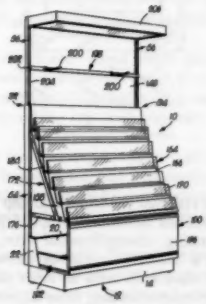
(d) said end strip being provided with a horizontal member adapted to engage an adjacent organizer unit and an upwardly extending member adapted to serve as the guard rail marking lateral termination of the shelf organizer; said guard rail also being provided near its rear end with horizontally extending spaced notches which correspond to the horizontally extending grooves of said product supporting member; said notches being adapted to be cut or broken to adjust the length of said guard rail.

4,460,097

ADJUSTABLE STORE FIXTURE SYSTEM

James P. Darnell, II, Overland Park, Kans., and Jon D. Bridgwater, Cedar City, Utah, assignors to Hallmark Cards Incorporated, Kansas City, Mo.

Filed Jan. 14, 1981, Ser. No. 224,942
Int. Cl.³ A47B 47/00
U.S. Cl. 211—189 **9 Claims**



1. A product display fixture comprising:

a floor-engaging base having front and rear sides;

a pair of upright support standards projecting upwardly from the rear side of said base;

up upwardly and rearwardly inclined product display deck having a stair-stepped series of product-receiving-and-displaying compartments; and

means suspending said deck from said standards in full supported relationship thereby and located forwardly of the standards in overhanging relationship from said base with the lower front extremity of said deck generally aligned with but not supported by said front side of the base and the upper rear extremity of the deck leaning against an upper portion of said standards generally aligned with the rear side of said base.

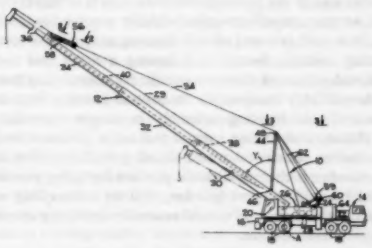
said suspending means including a pair of rigid sling members on opposite sides of said deck provided with inner ends attached to corresponding ones of said standards and with outer ends coupled with the deck adjacent said lower front extremity thereof, each of said sling members including a generally horizontally outwardly extending lower leg and an upwardly and rearwardly extending diagonal leg rigidly secured to said lower leg adjacent said outer end of the member.

4,460,098

PENDANT CONTROL SYSTEM FOR PENDANT SUPPORTED BOOM

Terrance C. Scherman, Cedar Rapids, Iowa, assignor to FMC Corporation, Chicago, Ill.

Filed Jun. 30, 1982, Ser. No. 393,984
Int. Cl.³ B66C 23/04
U.S. Cl. 212—187 **5 Claims**



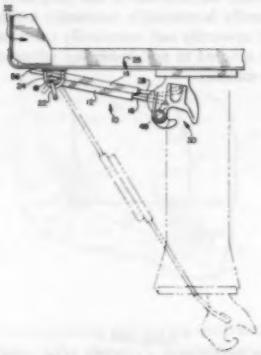
1. A pendant control system for a pivotally supported multisection telescopic boom with means for selectively extending and retracting the sections, said boom having a mast pivoted thereon and movable to a desired mast-boom working angle by power driven boom supporting means connected to the mast and capable of selectively raising and lowering the mast and boom; said pendant control system comprising pendant means trained over said mast and connected to an outer end portion of the boom and to a pendant winch, second power means for driving said winch in a pendant pay-out or haul-in direction, means responsive to changes in said desired working angle within a predetermined minimum angular control range for activating said second power means for driving said winch in a direction which will return said mast to said desired working angle, and switch means responsive to movement of said mast out of said minimum angular control range and toward a stowed position for deactivating said means responsive to changes in said working angle and for driving said second power means and said winch in a pendant haul-in direction to haul in said pendant means and maintain tension thereon.

4,460,099

TELESCOPING UNCOUPLING LEVER FOR RAILWAY CAR COUPLERS

Kenneth G. Empson, Aurora, Ill., assignor to Garbe Iron Works, Inc., Aurora, Ill.

Continuation of Ser. No. 264,681, May 18, 1981, Pat. No. 4,378,890. This application Mar. 11, 1983, Ser. No. 474,488
The portion of the term of this patent subsequent to Apr. 5, 2000, has been disclaimed.
Int. Cl.³ B61G 1/04, 3/08, 7/14
U.S. Cl. 213—159 5 Claims



1. An improved telescoping uncoupling lever for uncoupling railroad cars having a coupler and support bracket mounted to the end sill thereof, with the lever including first and second longitudinal tubular metallic housings in fixed together, parallel, side-by-side, relation defining a housing assembly having a first end at one end of the housing assembly and a second end at the other end of the housing assembly, a first elongate rectilinear telescoping metallic member slidably received in the first housing from said one end of said housing assembly in torque transmitting relation thereto and having a distal end and a proximal end, a second elongate rectilinear telescoping metallic member slidably received in the second housing from said other end of said housing assembly in torque transmitting relation thereto and having a distal end and a proximal end, a handle member connected to the distal end of said first telescoping member including a handle portion for being pivotally supported by said support bracket, and an uncoupling arm connected to the distal end of said second telescoping member for engaging said coupler,

the improvement comprising:

a first stopping sleeve disposed between said first telescoping member and said first housing adjacent and within said one end of said housing assembly in embracing relation to said first telescoping member,

said first stopping sleeve including a first locking element that mates with a second locking element in the wall of said first housing for locking said first stopping sleeve to said first housing within same,

a second stopping sleeve disposed between said second telescoping member and said second housing adjacent and within said other end of said housing assembly in embracing relation to said second telescoping member,

said second stopping sleeve including a first locking element that mates with a second locking element in the wall of said second housing for locking said second stopping sleeve to said second housing within same,

said stopping sleeves each being of one piece construction formed from a plastic bearing material,

a first end abutment member keyed to said first telescoping member adjacent the proximal end of same and disposed between said first telescoping member proximal end and the underside of said first housing in sliding relation to said first housing,

a second end abutment member keyed to said second telescoping member adjacent the proximal end of same and disposed between said second telescoping member proximal end and the underside of said second housing in sliding relation to said second housing,

said abutment members each being of one piece construction formed from a plastic bearing material,

first slide bearing means interposed between said first telescoping member and said first housing and within said first housing in embracing relation to said first telescoping member for maintaining said first telescoping member adjacent said proximal end thereof in said torque transmitting relation with respect to said first housing,

and second slide bearing means disposed between said second telescoping member and said second housing and within said second housing in embracing relation to said second telescoping member for maintaining said second telescoping member adjacent said proximal end thereof in said torque transmitting relation with respect to said second housing,

with said slide bearing means being defined by plastic bearing material,

said first housing adjacent said other end of said housing assembly defining internal stop means positioned for stopping engagement with said first slide bearing means for maintaining same within said first housing,

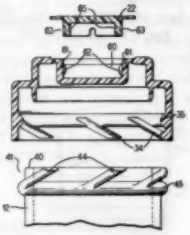
and said second housing adjacent said one end of said housing assembly defining internal stop means positioned for stopping engagement with said second slide bearing means for maintaining same within said second housing.

4,460,100

REMOVABLE RESISTANT CONTAINER CAP AND NECK ASSEMBLY

Sidney M. Libit, Glencoe, Ill., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 17, 1983, Ser. No. 505,347
Int. Cl.³ B65D 41/48
U.S. Cl. 215—237 20 Claims



1. A removable resistant container and cap assembly for use with a threaded necked container comprising: a cap having a top with a depending circumferential skirt, the skirt inner diameter having a diameter reducing circumferential bead intermediate skirt axial ends with an inner diameter threaded portion below the bead extending from adjacent an open axial end of the skirt opposite the top, the threads running out at the inner diameter bead, a full inner diameter portion extending from the inner diameter bead to adjacent the top, at least the portion of the skirt which includes the threaded portion and the inner diameter bead being circumferentially resilient, the container neck terminating in an open annular top and having an outer diameter threads dimensioned to engage the inner diameter threads of the cap, the outer diameter threads extending from adjacent the annular top towards a main body of the

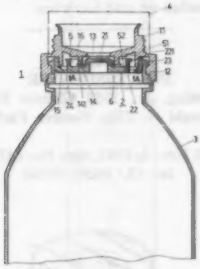
container, the neck having a diameter increasing outer diameter circumferential bead intermediate the main body and the annular top, the outer diameter threads running out at the outer diameter bead, the inner diameter bead having a diameter less than the diameter of the outer diameter bead, the full diameter portion of the cap having an inner diameter at least as large as the diameter of the outer diameter bead and outer diameter threads and having an axial length and diameter sufficient to receive the threaded portion of the neck and the bead of the neck between the cap top and the cap inner diameter bead and the neck having an axial portion between the outer diameter bead and main body having an axial length and outer diameter sufficient to be received within the threaded portion and inner diameter bead of the cap.

4,460,101

TORTUOUS PASSAGE COVER FOR FLEXIBLE LIQUID CONTAINER

Bang-Tsai Tseng, No. 118, Lane 526, Ta-Tung Rd., Tainan City, Taiwan

Filed Dec. 28, 1982, Ser. No. 454,242
Int. Cl.³ B65D *51/24*
U.S. Cl. 215—307 **5 Claims**



1. A tortuous passage cover for a flexible container comprising an upper cover body and a lower cover body defining a tortuous passage therebetween, said upper cover body having a top wall and a downwardly extending surrounding annular wall and including:

(a) a lower joint ring formed in the outer periphery of the downwardly extending portion of the upper cover body annular wall sealingly engageable with the top of the container;

(b) a central outlet for the liquid within the container defined by the top wall of the upper cover body; and

(c) outer and inner spaced annular rings depending from the inner surface of the top wall coaxially with the central outlet;

said lower cover body having a bottom wall and a surrounding upwardly extending annular wall frictionally engageable with the outer coaxial annular ring of the upper cover body for retaining the upper and lower cover body together, and including

(d) at least one outwardly flanged annular ring inwardly spaced from and coaxial with the surrounding annular wall of the lower cover body and extending upwardly from the inner surface of the bottom wall of the lower cover body into the space between the coaxial annular rings of the upper cover body;

(e) a cylindrical protrusion spaced from and coaxial with the flanged annular ring extending upwardly from the inner surface of the bottom wall of the lower cover body into the space defined by the inner annular ring of the upper cover body, and conforming to the cross-sectional dimensions of the outlet;

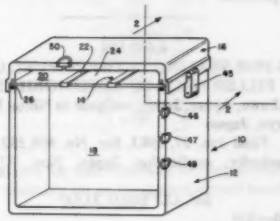
(f) a plurality of annularly disposed inlet apertures defined by the portion of the bottom wall of the lower cover body between the surrounding annular wall and the flanged annular ring for passage of liquid from the container; said annular rings and cylindrical protrusion defining a tortuous passage between the upper and lower cover bodies communicating said inlets with said outlet for tortuous passage of liquid in the container through the inlet apertures to the central outlet so that gravitational forces acting on liquid in the container when the container is tilted or inverted are insufficient to move the liquid through the tortuous passage.

4,460,102

SEALED CONTAINER

Albert J. Barringer, 2678 Ehrhart Dr., Springfield, Ohio 45502

Filed Sep. 23, 1982, Ser. No. 422,426
Int. Cl.³ B65D *25/04, 90/32*
U.S. Cl. 220—85 B **5 Claims**



1. A shipping and storage container comprising a box having an open top, a lid for said box, and a closure interposed between said box and said lid, said box and said closure defining a first chamber adapted for containing at least one item, and said lid and said closure defining a second chamber; said closure comprising a frame means, an expansible/contractable member in operable communication with said first chamber to allow expansion/contraction of the atmosphere within said first chamber, and at least one seal member adapted to provide sealing relation between said closure and said box; means for equalizing the pressure of said atmosphere within said first chamber with ambient pressure external to said chamber; means for equalizing the pressure within said second chamber with ambient pressure external to said container; said box being provided with a plurality of alignment pins, and said lid and said closure frame means each having a plurality of alignment holes in corresponding location to said alignment pins; said lid having an overhanging lip for engaging and providing protection for the top outer peripheral surface of said box; and a plurality of latching devices for joining together said box and said lid.

4,460,103

COVER FOR DRINK CONTAINERS

Lord Rama, and David Eccles, both of Rosendale, N.Y., assignors to Alvex Development Corp., Carmel, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,683
Int. Cl.³ B65D *41/26, 41/56*
U.S. Cl. 220—254 **7 Claims**

1. A cover for a drink container having a rim, said cover made from a resilient non-metallic material and comprising a continuous, uninterrupted peripheral rim section adapted to fit snugly over the rim of the container and a resilient cover panel extending between the confines of said rim section to cover the container, said cover panel having a weakening line within the confines of said cover panel and defining a flap and a hinge for the flap, said flap having a raised pull-tab which may be grasped and pulled so that part of the weakening line may be torn and the flap opened by folding at its hinge, said hinge

being positioned in an essentially radial direction relative to the center of said resilient cover panel so that one of the ends of said hinge is adjacent the opening so formed at the part thereof nearest said peripheral rim section, said cover panel also having a depressed well section which is of such size and shape and so positioned that when the flap is folded over on its hinge, the pull-tab may be nested in the well and the flap thereby retained in an open position.

4,460,104

O-RING FOR SEALING BETWEEN FUEL CAP AND FILLER NECK OF AUTOMOBILES

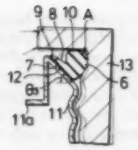
Akira Kitsukawa, Ayase, Japan, assignor to Nihon Radiator Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1983, Ser. No. 508,252

Claims priority, application Japan, Nov. 27, 1982, 57-179735[U]

Int. Cl.³ B65D *53/00*

U.S. Cl. 220—304 **10 Claims**



1. For use in providing a seal between a filler neck and a cap, an O-ring characterized by a single main body having an integrally formed annular lip projecting outwardly from the main body, said lip having an inclined lower surface for contacting a corresponding inclined upper surface of said filler neck, said lip lower surface defining an angle of inclination θ_1 with respect to the horizontal principal extent of the O-ring body, said filler neck upper surface defining an angle of inclination θ_3 with respect to horizontal, θ_1 being substantially less than θ_3, said annular lip being deformable upon tightening of said cap to bring said lip lower surface into hermetically sealing contact with said filler neck upper surface.

4,460,105

SAFETY LATCH FOR HINGED LID

Jim R. Cox, 431 Debby St., Fallbrook, Calif. 92028

Filed Sep. 22, 1982, Ser. No. 421,085

Int. Cl.³ B65D *43/24*

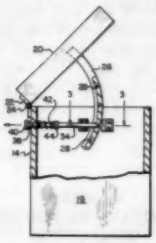
U.S. Cl. 220—335 **3 Claims**

1. The combination of an open top container having a closure hinged to a top edge of a back wall thereof for pivoting about a horizontal axis and a closure support bracket for supporting said hinged closure in the open position comprising:

an elongated latch bar curved about an axis in the direction of the pivot axis of the closure having a series of spaced notches along the one surface toward the axis and attached to the closure member;

a guide bracket attached to a side wall adjacent the open top of the housing for receiving and guiding said elongated bar; and

an elongated latch pin having a forward end and an outer end and a handle on said outer end exterior of at the back of said container, said latch pin extending through said back wall and supported by said back wall and said guide bracket and including spring means for biasing said forward end of said pin into engagement with said one surface of said latch bar for selective latching engagement with said notches on said latch bar.



4,460,106

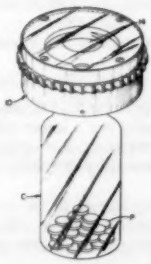
PILL DISPENSER

Thomas S. Moulding, Jr., 1954 Glencoe St., Denver, Colo. 80220, and Donald G. Ellis, Geneva Park, Boulder, Colo. 80302

Filed Nov. 2, 1981, Ser. No. 317,430

Int. Cl.³ B65G *59/06*

U.S. Cl. 221—1 **38 Claims**



1. A pill dispenser adapted for selective removal of pills from a receptacle, comprising:

first compartment means in communication with said receptacle including guide means adapted to receive at least one pill from said receptacle and to isolate said pill in said first compartment means from the other pills in said receptacle;

transfer means including a second compartment provided with a transfer opening in communication with said guide means in said first compartment means, said transfer opening adapted to receive a pill from said guide means when said transfer opening is aligned with said guide means, said transfer means operative to advance said transfer opening away from alignment with said guide means; and

discharge means including an exist opening therein, said exit opening being alignable with said transfer opening when said transfer means advances a pill retained in said transfer opening away from said guide means into alignment with said exit opening whereby to permit retrieval of a pill which is advanced by said transfer means into said exit opening, said first and second compartments and said discharge means provided with a common opening

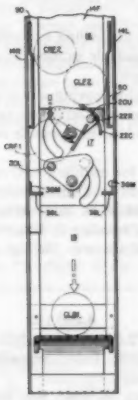
therein, and said guide means in communication with said receptacle through said common opening.

4,460,107

PLURAL MODE MULTI-COLUMN DISPENSING MACHINE

James C. Lindsey, Chattanooga, Tenn., assignor to Cavalier Corporation, Chattanooga, Tenn.

Filed Feb. 8, 1982, Ser. No. 347,038
Int. Cl.³ G07F 11/08
U.S. Cl. 221—67 25 Claims



1. A dispensing apparatus including at least one dispensing assembly comprising:

(a) a storage compartment defined by front, back, right side, and left side walls and adapted to store a plurality of cylindrical articles in column arrangement;

(b) first and second motor-driven gating members, each gating member for supporting cylindrical articles and for selectively releasing cylindrical articles for downward movement; and

(c) a dispensing zone below said first and second gating members for receiving cylindrical articles released by said gating members; and

wherein said dispensing assembly is operative to dispense one cylindrical articles at a time and is disposable in:

I. a triple depth mode for dispensing cylindrical articles sequentially from first, second and third tandem columns respectively disposed in first column, second column and third column zones, and

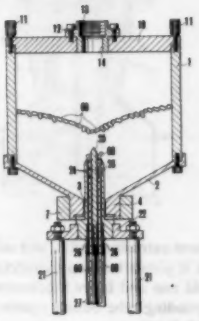
II. a double depth mode for dispensing cylindrical articles sequentially from A and B tandem columns respectively disposed in an A column and a B column zone, said A column zone including at least part of said first column zone and at least part of said second column zone, and said B column zone including at least part of said second column zone and at least part of said third column zone, and wherein said first and second gating members are operable to reciprocate between right and left, and said first gating member is movable relative to said second gating member.

4,460,108

APPARATUS FOR FEEDING ELECTRIC CIRCUIT ELEMENTS

Teruyoshi Noda, and Iwao Ichikawa, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 145,719, May 1, 1980, abandoned. This application May 13, 1982, Ser. No. 377,987
Claims priority, application Japan, May 12, 1979, 54-58199
Int. Cl.³ B65H 3/32
U.S. Cl. 221—94 9 Claims



1. An apparatus for automatically feeding electrical circuit elements for assembly on an integrated circuit board comprising:

a container for storing a plurality of electrical circuit elements,

transfer means operatively associated with said container for transferring a number of said electrical circuit elements from said container to an integrated circuit board, said transfer means including a plurality of circuit element transfer members for receiving said electrical circuit elements from said container, and

shutter means movable in a path across the path of said transfer means between a first position for receiving a predetermined number of electrical circuit elements from said circuit element transfer members and preventing passage of said predetermined number of said elements to the circuit board and a second position for passing a selectively variable number of said electrical circuit elements through said shutter means for assembly on an integrated circuit board, wherein said selectively variable number is determined by a shutter member movable with said shutter means for preventing passage of some of said predetermined number of said electrical circuit elements through said shutter member when said shutter means is in said second position.

4,460,109

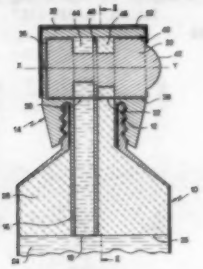
DEVICE FOR THE DISTRIBUTION OF TWO PASTY SUBSTANCES IN REGULABLE PROPORTIONS

Luc Ducros; Roger Navarro, both of Castres, France, and Charles Kaeser, Pully, Switzerland, assignors to Pierre Fabre S.A., Paris, France

Filed Apr. 18, 1983, Ser. No. 485,799
Claims priority, application France, Apr. 19, 1982, 82 06660
Int. Cl.³ B65D 35/22; B29F 3/00
U.S. Cl. 222—94 10 Claims

1. A device for the distribution, in regulable proportions, of two pasty substances, comprising a deformable tube for separately containing said pasty substances and provided with an outlet orifice, a cap adapted to be fitted on the outlet orifice of said tube to define two chambers inside said tube which are capable of containing said two pasty substances, a distributor mounted so that it can pivot in said cap between two extreme positions about an axis perpendicular to the axis of said outlet

orifice of said tube, said distributor being mounted such that a cylindrical surface thereof sweeps over a substantially cylindrical inner surface of said cap between said positions, said distributor having at least one passage opening through an inlet section in the cylindrical outer surface thereof and being terminated by a common extrusion outlet, and said distributor being mounted so that it pivots inside a cylindrical casing which is integral with said cap and bears a common extrusion orifice and two corresponding tube outlets opening in a curved surface abutting said distributor.

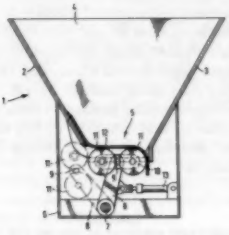


4,460,110

OPENABLE CLOSING DEVICE FOR FREIGHT OR STORAGE TANKS

Pertti J. Helander, Kuopio, Finland, assignor to Esko Poltto Oy, Helsinki, Finland

Filed Mar. 9, 1982, Ser. No. 356,282
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—504 10 Claims



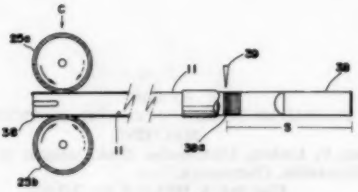
1. An apparatus for closing, so as to be opened, a tank for bulk material, the tank having at least one long emptying opening on the bottom, one or two flexible belts that are essentially as long as the opening and are fastened at one end to the tank, roller means that is under the belt and of approximately the same length and that supports the belt in the closed position and can be removed from the closed position, and means for moving the roller means across the opening between two extreme positions, said means for moving the roller means comprising guiding means fitted onto the tank's frame to guide the roller means between the said two extreme positions, in a convex arcuate path providing the roller means with a top dead center, by way of the top said dead center and operating means for forcing the roller means over the said top dead center.

4,460,111

APPARATUS FOR TURNING HOSE

Tomotake Nakahira, 140-5, Tsukiyama, Yamatotakadashi, Nara, Japan

Filed Aug. 9, 1982, Ser. No. 406,412
Int. Cl.³ A41H *43/00*
U.S. Cl. 223—43 3 Claims



1. An apparatus for turning a circular knit hose inside out and sectioning same into unit hoses:

a bed;

an air suction pipe for pulling a circular knit hose by suction therethrough, said air suction pipe extending along the length of said bed;

a carrier reciprocally moving along said air suction pipe;

a pair of contact rollers carried on said carrier, said contact rollers being located in opposite sides to said air suction pipe;

a swinging means for enabling said contact rollers to move toward and from said air suction pipe, said swinging means being carried on said carrier; said contact rollers being capable of rotating in either direction; and

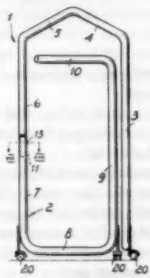
a cutter located adjacent to the top end of said air suction pipe.

4,460,112

FOLDING CLOTHES STAND STRUCTURE

Franco Ziliani, Brescia, Italy, assignor to Norda Tubazioni S.p.A., Brescia, Italy

Filed Oct. 26, 1981, Ser. No. 315,093
Claims priority, application Italy, Nov. 3, 1980, 25743 A/80
Int. Cl.³ A41D *27/22*
U.S. Cl. 223—88 5 Claims



1. A folding clothes stand structure comprising a first shaped rod-like element having a first plurality of coplanar straight portions bent with respect to each other to define a first part of loop-like configuration extending in a first plane and surrounding a first area, at least a second shaped rod-like element having a second plurality of coplanar straight portions bent with respect to each other to define a second part of loop-like configuration extending in a second plane, said second loop-like configuration part being smaller than said first loop-like configuration part thereby to be contained within said first area and

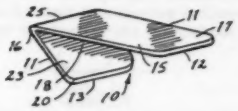
clearing said first loop-like configuration part when said first and said second loop-like configuation parts assume a position coplanar to each other, said first plurality of straight portions including one terminal straight portion having first rotatable joint means thereon defining an axis of rotation coaxial with said one straight portion and said second plurality of coplanar straight portions including another terminal straight portion having second rotatable joint means matingly connectable with said first rotatable joint means in coaxial relationship therewith thereby to align said one terminal straight portion with said another terminal straight portion and to allow said first part of loop-like configuration and said second part of loop-like configuration to perform relative rotation with respect to each other about said axis of rotation, said first plurality of coplanar straight portions including at least one section thereof extending transverse to said one terminal straight portion to provide a first support portion for a garment portion, said second plurality of coplanar straight portions including at least another section thereof extending transverse to said another terminal straight portion to provide at least a second support portion for another garment portion, said first shaped rod-like element having first rest formations on a side thereof opposite said first support portion and said second shaped rod-like element having second rest formations on a side thereof opposite said second support portion, said first and said second rest formations being coplanar to each other thereby to allow in use said stand structure to be placed onto a supporting plane surface with said rest formations resting thereon, in use said supporting plane being a horizontal plane and said axis of rotation being vertical.

4,460,113

NEEDLEWORK TOOL AND FINGER PROTECTOR

Rebecca E. Nicklous, W. 2423 Decatur, Spokane, Wash. 99208

Filed May 4, 1981, Ser. No. 260,199
Int. Cl.³ D05B 91/04
U.S. Cl. 223—101 **3 Claims**



1. A needlework tool and finger protector for receiving a finger of a needlecraft artist and being positioned against the underside of a needlecraft fabric to assist a needlecraft artist to stitch evenly spaced hand stitches from the upper side of the needlecraft fabric using a hand needle with a sharp pointed end while protecting the artist's finger from the sharp pointed end of the needle, comprising:

a V-shaped sheet metal body having first and second sheet metal leg sections extending divergently outward from a fold apex at an acute angle;

said first leg section having a smooth imperforate and flat sheet metal surface extending from the fold apex a prescribed length distance to a smooth and continuous transverse first section terminal edge, the prescribed length distance being less than the normal distance of the needlecraft artist finger from its second joint to its tip;

said second leg section having a smooth imperforate and flat sheet metal surface extending from the fold apex a prescribed length distance to a smooth and continuous transverse second section terminal edge, the prescribed distance of the second leg section being less than the prescribed length distance of the first leg section;

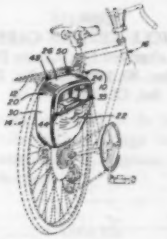
said fold apex having a radius of curvature considerably less than the normal radius of curvature of the artist's fingertip for enabling the apex to be forced upward against the underside of the needlecraft fabric to cause the sharp needle end to initially engage one of the leg sections as the end is thrust downward through the fabric and to be deflected upward over the apex and back through the fabric to form an evenly spaced hard stitch without endangering the supporting finger.

4,460,114

BICYCLE SADDLE BAG

Louis Grenier, 134 Laurier, Montreal, Canada

Filed Feb. 15, 1983, Ser. No. 466,520
Claims priority, application Canada, Feb. 24, 1982, 396970
Int. Cl.³ B62J 9/00
U.S. Cl. 224—32 R **9 Claims**



1. A bicycle saddle bag comprising, in combination:

a container having a body formed of a rigid material, said body having a rim defining an aperture and a recess formed in said body adjacent said rim;

a cover formed of pliable material having a dimension such as to fit over said aperture and a contour such as to be received in said recess, said contour being formed of an extendible material so that said cover may fit in resilient engagement with said container; and

attachment means cooperatingly disposed on said cover and said container body so as to allow partial clearing of said cover over said aperture to permit access to contents in said container without having to completely remove the cover from the container.

4,460,115

LOW-MOUNT RACK FOR PANNIERS

William S. Jackson, 2860 Tessmer, Ann Arbor, Mich. 48103

Filed Dec. 20, 1983, Ser. No. 563,465
Int. Cl.³ B62J 9/00
U.S. Cl. 224—32 R **14 Claims**

1. Apparatus for carrying panniers on opposite sides of and beneath the top of a wheel of a cycle mounted for rotation about an axle, said cycle having structure with at least one fixed point disposed above and inboard of the axle, said apparatus comprising:

a generally U-shaped bar having opposite ends thereof adapted to be held at a location in the area of the axle, said bar further including a pair of legs of sufficient length and joined together so that the bar extends over the top of the

wheel and is disposed at an outboard angle with respect to an imaginery vertical line passing through the axle;

fastening means for each pannier including a first fastening means adapted to be located in the area of the fixed point on the cycle structure and serving to be releasably connect an upper rear corner portion of the pannier directly to the cycle structure, and second fastening means for releasably connecting an opposite upper rear corner portion of the pannier directly to a point on a leg of the bar;

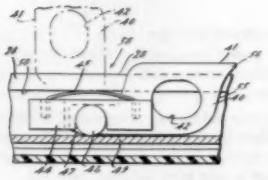
whereby said bar can be easily detached from the cycle by unsecuring the bar ends from the axle and releasing the first fastener from the cycle structure.

4,460,116

VEHICLE ARTICLE CARRIER

John A. Bott, 931 Lakeshore Dr., Grosse Pointe, Mich. 48236

Filed Dec. 30, 1981, Ser. No. 335,703
Int. Cl.³ B60R *11/00*
U.S. Cl. 224—321 **17 Claims**



1. An article carrier system for supporting and securing articles on a generally horizontally extending exterior body surface of an automobile, comprising a pair of elongated slats on said surface extending in positions substantially parallel to one another, means permanently securing said slats to said body in said positions, said slats being substantially rectangular in vertical cross section with a width substantially greater than the height of the section, the tops of said slats being substantially flat and parallel to said horizontal surface and providing means on which articles may be rested and supported above said surface, at least one elongated cross member extending transversely of said slats and having end portions slideable along the lengths of the respective slats and removeably mounted on said slats, and abutment means for positioning articles on said article carrier system slideably and adjustably disposed on said at least one cross member comprising a base portion disposed within said channel, a vertically disposeable abutment member pivotally attached to said base portion to pivot between a vertically disposed abutment position and a horizontally disposed storage position with at least a portion of said abutment member in said storage position being disposed within said channel, and including means for clampingly engaging said abutment means in selected positions along the length of said at least one cross member comprising means for biasing said base portion of said abutment means away from said clamping surfaces of said channel and means operable in response to the placement of said abutment member in said vertically disposed position for clampingly engaging said biasing means against said clamping surfaces to clampingly engage said abutment means to said cross member.

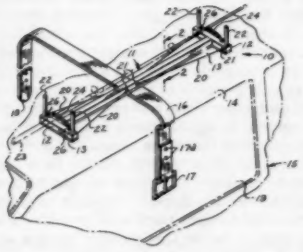
4,460,117

FISHING POLE HOLDER FOR AUTOMOTIVE VEHICLES

Joe C. Smalls, and Franklin R. Smalls, both of 114 Colleton Loop, Walterboro, S.C. 29488

Filed May 2, 1983, Ser. No. 490,447
Int. Cl.³ B60R *9/12*
U.S. Cl. 224—324 **1 Claim**

1. A fishing pole holder for automotive vehicles, comprising, in combination, an elongated bar, a cross bar fixedly secured at each opposite end of said elongated bar, a belt extending transversely to said elongated bar being secured to the bottom thereof, for being removably received through opposite side windows of an automotive vehicle when said holder is placed upon the roof thereof, a pad on the bottom of said elongated bar and said cross bars for resting against said roof, an upright



dowel near each opposite end of each said cross bar defining upon each said cross bar a space therebetween for receiving fishing poles; and a coil spring upon each said cross bar, extending between said dowels, being secured at opposite ends to eyes mounted upon said cross bar for said fishing poles to rest between coil turns of said spring.

4,460,118

METHOD FOR FORMING ELECTRIC WELDED PIPE

Matsuo Ataka; Itaru Aoki; Takashi Horita, and Takehisa Nagao, all of Tokai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 28, 1982, Ser. No. 383,197
Claims priority, application Japan, May 29, 1981, 56-81100
Int. Cl.³ B23K *31/06;* **B21D** *5/12, 39/03*
U.S. Cl. 228—146 **4 Claims**

1. In a method for making an electric resistance welded tubular product, which comprises transporting a flat strip in the direction of its length while subjecting the flat strip to the successive steps of breakdown roll forming, fin pass roll forming, and squeeze roll forming to form a butt junction between the opposite edges of the strip which has an I-shaped groove, and finally butt resistance welding said butt junction at the I-shaped groove, the improvement comprising:

carrying out the initial stage of the breakdown roll forming while keeping a region l measured inwardly in the width direction from each edge of said flat strip out of contact with at least one of the pair of opposed breakdown rolls used for the initial stage of breakdown roll forming so that said regions l have substantially zero curvature in the width direction of the strip; and

carrying out further breakdown rolling of said regions l by at

least one pair of breakdown rolls which have roll profiles for maintaining the zero curvature of said regions.

4,460,119

DOOR HANGING ENVELOPE

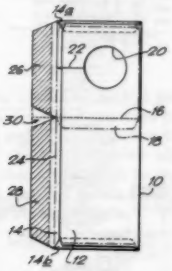
Anthony E. B. Goodfellow, 3 Clarendon Dr., Wymbush, Milton Keynes MK8 8DA, England; James C. Kennemer, P.O. Box 2165, Birmingham, Ala. 35201, and Timothy J. Donlevy, Chapman House, Farwig La., Bromley Kent, BR1 3QS, England

Filed Aug. 9, 1982, Ser. No. 406,162

Claims priority, application United Kingdom, May 5, 1982, 8212948

Int. Cl.³ B65D *27/08*

U.S. Cl. 229—68 R **5 Claims**



1. A door hanging envelope which comprises an envelope portion, said envelope portion being formed from two interconnected panels, a first flap for closing said envelope portion, a hanging portion, said hanging portion being separable from said envelope portion, an aperture from which a slit radiates to allow insertion in said hanging portion of a doorknob or the like which is larger than said aperture, and a second flap for sealing said slit so that said door hanging envelope cannot be removed from said doorknob or the like without tearing said envelope.

4,460,120

NARROW BODIED, SINGLE- AND TWIN-WINDOWED PORTABLE LASER SCANNING HEAD FOR READING BAR CODE SYMBOLS

Howard M Shepard, Great River; Edward D. Barkan, South Setauket, and Jerome Swartz, Stonybrook, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation of Ser. No. 342,231, Jan. 25, 1982. This application Aug. 1, 1983, Ser. No. 519,107

Int. Cl.³ G06K *9/24*

U.S. Cl. 235—472 **10 Claims**

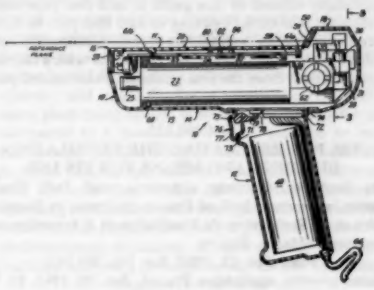
1. In a laser scanning system for reading bar code symbols, a hand-held laser scanning head comprising:

(a) means including a laser light source mounted in the head for generating an incident laser beam, and for directing said incident laser beam along a path toward a reference plane located exteriorly of the head, and to a bar code symbol located in the vicinity of the reference plane to thereby generate reflected laser light of variable intensity which travels away from the symbol back toward the head;

(b) scanning means mounted in the head, for scanning at least one of said incident laser beam and said reflected laser light over a field of view across the bar code symbol;

(c) sensor means mounted in the head, for detecting the variable intensity of said reflected laser light over a field of view across the bar code symbol, and for generating an analog electrical signal indicative of the detected light intensity;

(d) signal processing means mounted in the head, for processing the analog signal, and for generating a digitized video electrical signal; and



(e) transmitter means mounted on the head, for transmitting the digitized video signal through the air by electromagnetic wave transmission to a system receiver located remotely from the head.

4,460,121

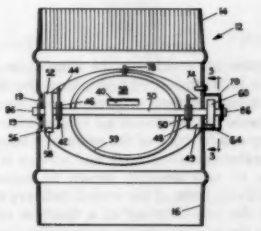
THERMALLY CONTROLLED VENT DAMPER

Warren R. Hedrick, Holland, Mich., assignor to Interpace Corporation, Parsippany, N.J.

Filed Sep. 13, 1982, Ser. No. 417,335

Int. Cl.³ F23N *3/00*

U.S. Cl. 236—1 G **12 Claims**



1. A thermally controlled damper for an exhaust flue for a combustion apparatus comprising:

a flue pipe having an inlet opening adapted to be connected to the exhaust flue from the combustion apparatus and an outlet opening for venting flue gases to the atmosphere;

a damper plate;

means mounting said damper plate in said flue pipe for rotation about an axis of rotation transverse to the axis of the flue pipe between a first position transverse to the flow of gases through the flue pipe and a second position parallel to the flow of gases through the flue pipe;

the damper plate being of a size to fit within the flue pipe and to substantially restrict the flow of gases through the flue pipe when the damper plate is in the first position;

a coil of bimetallic material mounted concentrically about the axis of rotation of the baffle plate and within the flue pipe, adjacent one side thereof to sense the temperature of gases passing through said flue pipe;

one end of said coil of bimetallic material being coupled to the flue pipe and the other end thereof being coupled to the damper plate such that said coil, when heated, rotates said damper plate from said first position to said second position; and

an opening in said one side of said flue pipe adjacent said coil of bimetallic material;

said flue pipe opening and said coil being so positioned that ambient air drawn through said opening passes first through said coil of bimetallic material before being substantially diluted in flue gases in said flue pipe and then through said outlet opening in said flue pipe to cool said coil and thereby maintain an inverse relationship between draft in the flue pipe and the degree to which the damper plate moves from the first position to the second position.

4,460,122

PROCESS FOR REGULATING THE VENTILATION OF A BUILDING AND MEANS FOR ITS USE

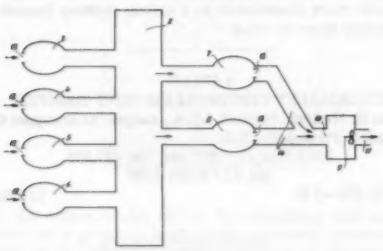
Pierre Jardinier, Gournay s/Amarne, and Jack Simonnot, Ozoire la Ferriere, both of France, assignors to Societe d'Etudes et de Recherches de Ventilation et d'Aerauliquesserva, Gournay S/Marne, France

Filed Jun. 15, 1982, Ser. No. 388,743

Claims priority, application France, Jun. 30, 1981, 81 12857

Int. Cl.[3] **G05D** *22/00*

U.S. Cl. 236—44 A **16 Claims**



2. A system for regulating the ventilation of a building in which fresh air is introduced into at least two living areas while stale air is exhausted from at least one service area, comprising means to cause the amount of air exhausted from each service area to vary as a function of the amount of humidity in the flow of the air exhausted from each said service area and in direct proportion to said amount, means to cause a distribution among the living areas of the overall delivery of air introduced to replace the exhausted air as a function of the amount of humidity in the air contained in these living areas in such a way that the delivery of air introduced is greater in the living area or areas in which the air exhibits the greatest amount of humidity, a fan for exhausting stale air and air passage openings that may operate as either stale air exhaust openings connecting the service areas with the exhaust opening of the fan, or fresh air intake openings connecting the living areas with the outside, each air passage opening comprising means for regulating its open section, a hygrometer associated with each air passage opening, and said means for regulating its open section being controlled by said hygrometer so that said section varies in proportion to the amount of humidity in the room under consideration as measured by said hygrometer.

4,460,123

APPARATUS AND METHOD FOR CONTROLLING THE TEMPERATURE OF A SPACE

John P. Beverly, East Aurora, N.Y., assignor to Roberts-Gordon Appliance Corp., Buffalo, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,771

Int. Cl.[3] **F23N** *5/20*; **F25B** *19/00*

U.S. Cl. 236—46 R **21 Claims**

1. Apparatus for controlling the temperature of a space; said apparatus comprising:

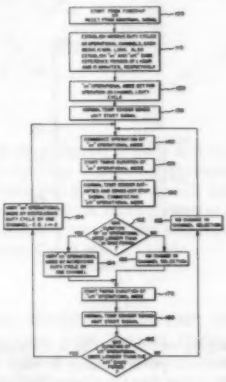
a periodically operated unit capable of modifying the temperature of a space:

a normal temperature sensor capable of sensing the temperature of said space and of providing either a normal unit start signal when the temperature of the space attains a designated normal start set point for the unit or a unit stop signal when the temperature of the space attains a designated stop set point for the unit; and

control means operationally interconnected with said unit and said normal temperature sensor and capable during operation of the control means of

establishing "on" and "off" base time periods and a plurality of unit duty cycles of varying percentages of unit operational time

commencing an "on" operational mode when said control means receives a normal unit start signal, the unit being caused to operate at one of said plurality of unit duty cycles during an "on" operational mode, the initial "on"



operational mode after startup being at an initial duty cycle of 100%, and also commencing and "off" operational mode when said control means receives a unit stop signal, the unit being caused to not operate during an "off" operational mode,

comparing the duration of "on" and "off" operational modes with the "on" and "off" base time periods, respectively and

varying the unit duty cycle by reducing the percentage of unit operational time if the duration of the "off" operational mode exceeds the "off" base time period and increasing the percentage of unit operational time if the duration of the "on" operational mode exceeds the "on" base time period.

4,460,124

DOUBLE THROW VALVE

Jean-Pierre Chalmin, Plainville, and John Doherty, Jr., Assonet, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 907,477, May 19, 1978, abandoned, which is a continuation of Ser. No. 583,131, Jun. 2, 1975, abandoned. This application May 13, 1983, Ser. No. 494,149

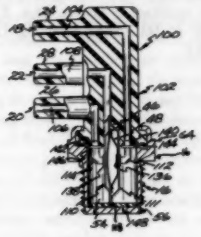
Int. Cl.[3] **G05D** *23/10*

U.S. Cl. 236—48 R **5 Claims**

1. A thermally responsive valve assembly comprising an elongated generally cylindrical housing having a longitudinal axis, first, second and third passages formed in the housing with at least a portion of each extending in the same direction as the longitudinal axis,

first, second and third ports formed in the housing and in communication respectively with the first, second and third passages, a first valve seat formed in the housing at an end of the first passage and a second valve seat formed in the housing at an end of the second passage, the first and second valve seats in facing relation to one another, a

chamber formed in the housing between the first and second passages and in communication with the third passage, a frame disposed in the chamber, the frame having first and second walls facing one another, the first valve seat formed in the first wall and the second valve seat formed in the second wall, tubular means connecting



the valve seats to their respective passages, a snap acting bimetallic valve member captured between the first and second walls, and means formed on the frame to lock it in the chamber, the valve member adapted upon selected temperature changes to move to and from the first and second valve seat and means biasing the valve member toward one of the valve seats.

4,460,125

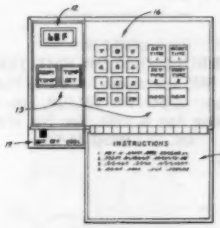
WALL THERMOSTAT AND THE LIKE

Charles E. Barker; Anthony C. Cairo, and Frederick T. Bauer, all of Holland, Mich., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 263,730, May 14, 1981, Pat. No. 4,373,664, which is a division of Ser. No. 116,959, Jan. 30, 1980, Pat. No. 4,319,711, which is a continuation of Ser. No. 840,582, Oct. 11, 1977, abandoned. This application Aug. 27, 1982, Ser. No. 412,286

Int. Cl.³ G05D *23/00*

U.S. Cl. 236—94 **1 Claim**



1. In an enclosure in which ambient air temperature is to be regulated, and having a vertical surface easily reached by a person, an improved unitary thermostat comprising:

a control unit mounted on said vertical surface and including a face having a first portion carrying a visual display of temperature, said face further having an adjacent second portion carrying a keyboard having selector positions operative in predetermined sequences to enter data into said control unit for achieving certain functions, said control unit further including a first switch in said first portion of said face, said control unit being operable responsive to actuation of said first switch to cause ambient temperature to be displayed as said visual display of temperature, and further including a second switch in said first portion of said face, said control unit being operable responsive to actuation by said second switch, in the absence of actuation of said first switch, to cause the set temperature to be displayed as said visual display of temperature; and

a cover plate normally overlying said second portion of said face in an upper vertical position whereby said keyboard selector positions are shielded from physical contact thereby to prevent entry of unwanted data into said control unit, said first portion of said face remaining exposed whereby said visual display of temperature is visible, said cover plate being hinged at its lower extremity for pivotal movement to a downward vertical position to uncover said second portion of said face whereby said selector positions may be operated to enter data into said control unit, the inner face of said cover including a display of operating instructions oriented right side up in said downward vertical position whereby a person is apprised of the predetermined sequences of operation of said selector positions necessary to achieve said certain functions.

4,460,126

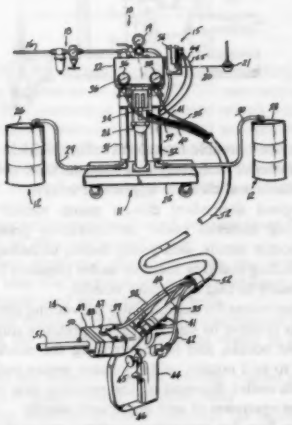
AIR PURGE/SOLVENT BATH APPARATUS AND METHOD

William J. Gates, Glen Ellyn, Ill., and John F. Zwirlein, New Haven, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 3, 1982, Ser. No. 354,427

Int. Cl.³ B05B *15/02*

U.S. Cl. 239—112 **8 Claims**



1. Apparatus for dispensing plural component polyurethane foam and cleaning residue plural component polyurethane foam using a mixing gas to mix the plural components in a mixing chamber of a dispensing assembly and dispense them from the assembly and a purging gas for helping to remove residue components and foam, the combination comprising:

(a) supply means to provide the plural components to the mixing chamber;

(b) gas supply means to provide mixing gas at a predetermined pressure to the mixing chamber;

(c) dispensing means connected to the mixing chamber and in fluid flow communication therewith;

(d) means cooperable with the dispensing assembly for retaining the assembly at least partially immersed in a liquid solvent after the foam has been dispensed; and

(e) means for actuating the gas supply means cooperable with the means for retaining the assembly so that upon insertion of the assembly into the means for retaining the assembly the gas supply to the assembly is stopped and the residual purging and mixing gas within the assembly is vented to permit the liquid solvent to travel up the dispensing means to the mixing chamber, the removal of the

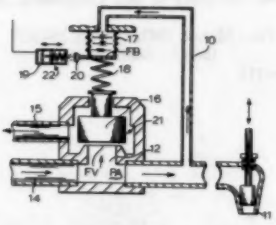
assembly from the means for retaining recommencing the gas supply.

4,460,127

DEVICE FOR APPLYING UNIFORM TRAFFIC LINES

Walter Hofmann, Hamburg, Fed. Rep. of Germany, assignor to Walter Hofmann Maschinenfabrik, Rellingen, Fed. Rep. of Germany

Filed Jun. 15, 1981, Ser. No. 274,029
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022448
Int. Cl.³ B05B *12/08*
U.S. Cl. 239—126 2 Claims



1. A device operable from a travelling vehicle for applying marking material uniformly to a road surface, comprising:

an openable and closable applicator nozzle;

travel-speed dependent driven pump means for feeding marking material under an operating pressure to said applicator nozzle, said pump means including a feed line for feeding marking material under pressure from a supply container to said applicator nozzle:

regulator means for substantially preventing pressure fluctuations relative to said operating pressure during opening of said nozzle, and for controlling the marking material flow to said nozzle, said regulator means including

a branch outlet disposed on the pressure side of said pump means upstream of said applicator nozzle;

a return line for returning marking material to a supply container;

a valve interposed between said branch outlet and said return line, and having a movable valve element for opening and closing said branch outlet;

a branch line coupled to said feed line;

a spring coupled to said valve element on the side thereof opposite to said branch outlet;

pressure-responsive spring bellows coupled to said spring and said branch line, said pressure-responsive spring bellows being actuatable during closing of said applicator nozzle;

closing means for closing said applicator nozzle; and

arresting means for arresting said spring bellows in a fixed position corresponding to said operating pressure;

said arresting means and said closing means being jointly actuatable;

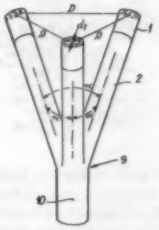
whereby a closing force corresponding to said operating pressure acts on said valve element upon joint actuation of said arresting means and said closing means, said closing force being insufficient to close off flow of said marking material from said feed line to said return line.

4,460,128

APPARATUS FOR DISPERSING FLAMMABLE GASES INTO THE ATMOSPHERE

Flavien Lazarre, Pau, France, assignor to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Division of Ser. No. 212,114, Dec. 2, 1980, Pat. No. 4,393,990. This application Jun. 28, 1982, Ser. No. 392,679
Claims priority, application France, Dec. 7, 1979, 79 30069
Int. Cl.³ G05D *16/00, 16/20;* F17C *13/12;* B05B *1/14*
U.S. Cl. 239—533.1 3 Claims



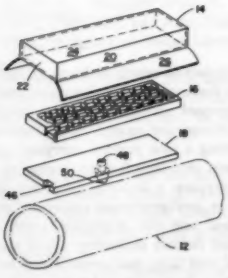
1. Apparatus to disperse flammable gas into the atmosphere, comprising at least one nozzle with an opening of specified surface area, extending above a pipe with an internal cross-sectional area which is greater than that of the nozzle, and which can be altered by a system connected to means for monitoring the ejection pressure from the nozzle, so that this pressure is kept between a minimum level, above explosion pressure, and a maximum level, below the stable ignition pressure in the presence of a flame, these minimum and maximum gas-ejection pressures being specified, for gas with a specified composition, in relation to the surface area of the nozzle opening, and wherein said at least one nozzle comprises a plurality of nozzles having axes which diverge relative to each other toward the nozzle openings at a minimum angle of α, the surface area S of the opening of each nozzle corresponds to a diameter $d=\sqrt{4S/\pi}$, the nozzle openings are spaced from each other by a distance D, and $D/d \geq 80$.

4,460,129

TURBULENT FLOW EMITTER

Donald O. Olson, 5885 Dartmouth St., Chula Vista, Calif. 92010

Continuation-in-part of Ser. No. 121,020, Feb. 13, 1980. This application Apr. 6, 1981, Ser. No. 251,218
Int. Cl.³ B05B *15/00*
U.S. Cl. 239—542 9 Claims



1. An emitter adapted for attachment to a conduit containing fluid under pressure in a drip irrigation system, said emitter comprising:

a generally oblong housing with spaced apart, elongated side

walls connected by relatively short end walls between top and bottom members and having inlet and outlet openings;

flow controlling means within said housing forming a tortuous fluid path to produce turbulent fluid flow between said inlet and outlet openings, said flow controlling means including an elongated planar body with raised portions extending from at least one of its surfaces and forming side walls, end walls and at least one intermediate wall spaced between and parallel to said side walls, said walls extending between said top and bottom members within said housing and having spaced apart fin members attached to and extending from said side walls and intermediate walls, each fin having a pair of surfaces generally transverse to the direction of fluid flow and extending toward a facing wall, the upstream surfaces of said fin members on predetermined ones of said walls making an angle with their associated wall of around 75° in the downstream direction, and the upstream surfaces of fins on walls facing said predetermined walls making an angle with their associated wall of around 75° in the downstream direction to form said tortuous fluid path; and

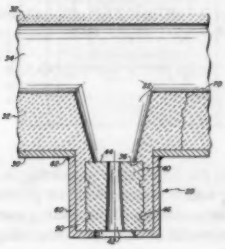
inlet fitting means extending from said bottom member and connected to said inlet opening into said housing.

4,460,130

HIGH TEMPERATURE GAS DISTRIBUTION INJECTOR

George P. Baumann, Sparta, and James A. Zboray, Randolph, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 21, 1979, Ser. No. 105,956
Int. Cl.³ B05B 1/14
U.S. Cl. 239—559 11 Claims



1. A gas distribution means of the type having a distribution manifold communicating with a gas source and with an injector, the manifold having a circumferential heat-resistant lining and a central passage therethrough, the improvement wherein said injector comprises:

a frusto-conical inlet extending from the central passage through the heat resistant lining; and

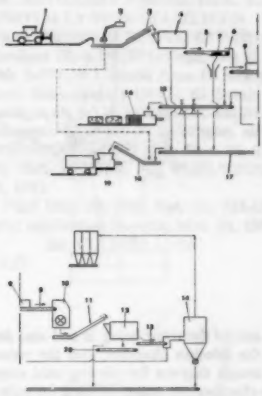
an outwardly directed nozzle disposed external to the lining, said nozzle communicating with said inlet and having an opening therethrough with at least one point at which the cross-sectional area of the opening in the direction of flow is less than that of the inlet said nozzle adapted to create at least a major portion of the pressure drop of the gas passing from the central passage through said inlet and said nozzle.

4,460,131

RECOVERY OF CARDBOARDS FROM THE COMMERCIAL WASTE

Manlio Cerroni, Via Bruxelles, 53, 00198 Roma, Italy

Division of Ser. No. 199,592, Oct. 22, 1980, abandoned. This application Feb. 11, 1983, Ser. No. 465,758
Claims priority, application Italy, Oct. 23, 1979, 50648 A/79
Int. Cl.³ B02C 19/12
U.S. Cl. 241—19 4 Claims



1. The method for reclaiming cardboard essentially free of contaminating substances of any kind from commercial waste containing a high percentage of cardboard mixed with paper, plastic film, organic material, ferrous and non-ferrous metal contaminants and with other contaminating substances including organic materials, comprising treating a flow of the commercial waste through a flow path providing the critical ordered sequence of

(a) removing bulky non-cardboard contaminants from the flow path of the commercial waste,

(b) separating small-size materials from the commercial waste to pass the commercial waste composed substantially of cardboard along the flow path,

(c) separating ferrous metals from the commercial waste,

(d) mincing the remaining commercial waste in the flow path,

(e) screening the minced waste to remove coarser materials from finer organic residue materials, and

(f) separating from the coarser materials the lighter paper and plastic materials by classification means preferably of the air flow type.

4,460,132

PULPER FOR PRODUCING PAPER PULP SUSPENSIONS

Helmut Thumm; Theodor Bähr, and Herbert Ortner, all of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

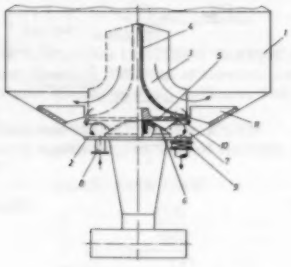
Continuation of Ser. No. 145,311, Apr. 29, 1980, abandoned. This application Jun. 21, 1982, Ser. No. 390,297
Claims priority, application Fed. Rep. of Germany, May 3, 1979, 2917814
Int. Cl.³ B02C 13/16, 18/22
U.S. Cl. 241—46.11 17 Claims

1. A pulper for producing a pulp suspension of paper, comprising:

a container having a wall; a rotor for pulp circulation in the container, the rotor being rotatable around an axis in the container in the region of the container wall, and the rotor facing toward the wall; the rotor being shaped for passing around the container wall and for disintegrating paper in

the container; a pulping chamber being defined in the upper part of the container at and around the rotor, the rotor serving for disintegrating paper into pulp suspension in the pulping chamber;

the rotor and the wall also being so shaped and placed with respect to each other that a pulp suspension dilution chamber, in communication with the pulping chamber, is defined in the bottom part of the container; the rotor having a bottom side, intersected by the axis thereof, and the



bottom side of the rotor being in and also defining the top side of the dilution chamber, and the rotor bottom side having means thereon for stirring said suspension in the dilution chamber; an outlet opening for pulp suspension in the wall and located in the dilution chamber; a pulp suspension dilution water conduit for discharging water into the dilution chamber whereby the suspension in the dilution chamber will be more diluted than the suspension in the pulping chamber.

4,460,133

WINDING DEVICE

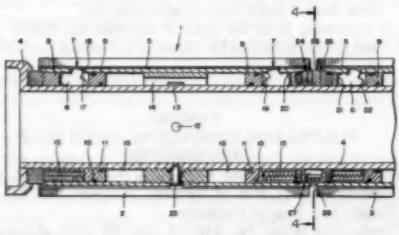
Herbert Turk, Remscheid, and Herbert Schiminski, Hückeswagen, both of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid-Lennep, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,327

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1981, 3127551; Jan. 30, 1982, 3203140

Int. Cl.³ B65H *54/54, 67/04, 65/00*

U.S. Cl. 242—18 A **12 Claims**



1. A winding device for winding threads on one or more bobbin tubes releasably held on a bobbin clamping chuck having a rotatably mounted chuck spindle shaft, said device including at the end position of each tube to be held on the chuck:

thread catching and gripping means for each tube to pick up and retain the thread being led onto the tube, said means comprising

(a) a pair of catch rings constructed with opposing annular faces mounted around the chuck spindle shaft and having an outer diameter smaller than the tube inner diameter, at least one of said catch rings being axially movable on the chuck spindle shaft of the clamping chuck to form an adjustable slit between said annular faces, and

(b) force transmitting means to press said catch rings against each other in order to close said slit and grip the thread between said opposing annular faces; and

thread severing means for cutting the thread after it is caught and gripped, said means comprising radial cutting blades having essentially axially arranged cutting edges, said blades being affixed to the chuck spindle shaft at circumferentially distributed positions around the chuck in the area of said slit, and the cutting edges of adjacent cutting blades lying on secants of the catch rings with the line of each secant being at most approximately tangential to the chuuck spindle shaft.

4,460,134

APPARATUS FOR ADJUSTABLY SUPPORTING BEARINGS FOR THE SHAFTS OF REELS OR THE LIKE

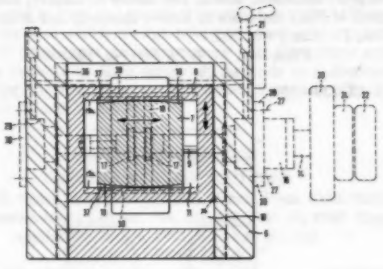
Udo Kunz, Lörrach, Fed. Rep. of Germany, assignor to Kunz Maschinen- und Apparatebau GmbH, Lörrach-Hauingen, Fed. Rep. of Germany

Filed Jul. 15, 1981, Ser. No. 283,379

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1980, 3026904

Int. Cl.³ B65H *19/02*

U.S. Cl. 242—68.4 **64 Claims**



1. Apparatus for adjustably supporting a bearing, particularly a bearing which mounts one end portion of a shaft supporting a reel in a winding or unwinding machine for webs of paper, textile material or the like, comprising:

(a) a support;

(b) a bearing;

(c) a carrier supporting said bearing;

(d) a first slide on said support connected with and mounting said carrier for movement;

(e) a second slide movably connected with said first slide, one of said slides being movable with reference to the other of said slides in a first direction, and said other slide being movable with reference to said support in a second direction transverse to said first direction; and

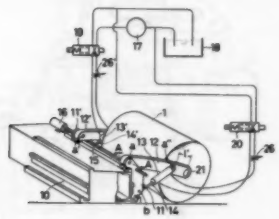
(f) means for moving said slides, said moving means including an input element, and motion transmitting means interposed between said input element and both of said slides so that said one slide is movable with reference to said other slide in said first direction via said input element and said other slide is movable with reference to said support in said second direction via said input element.

4,460,135

MILL ROLL STAND

Tadashi Hirakawa, and Hiroshi Sato, both of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed May 7, 1982, Ser. No. 376,193
Claims priority, application Japan, May 9, 1981, 56/699399
Int. Cl.³ B65H *19/02*
U.S. Cl. 242—68.4 4 Claims



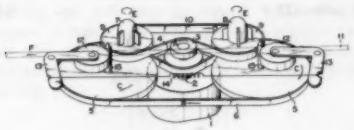
1. A mill roll stand to be supported on a floor, comprising:
a stationary frame secured to the floor and shaped to be supported across a width thereof by the floor;
a pair of movable frames attached to said stationary frame so as to move in the direction of the width of said stationary frame;
a pair of arms having one end pivotally supported by one of said movable frames and the other end fitted with a member for engagement with a paper roll;
driving means attached to said movable frames for swinging said arms;
control means for controlling said driving means; and
further means attached to said control means for actuating said driving means both at the same time and individually.

4,460,136

TAPE-DRIVING APPARATUS FOR A TAPE RECORDER

Akira Osanai, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 169,616, Jul. 17, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,305
Claims priority, application Japan, Jul. 24, 1979, 54-101951[U]
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—202 5 Claims



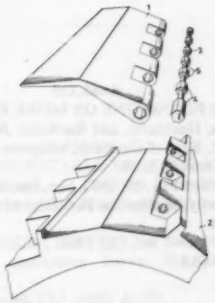
1. A tape-driving apparatus for a tape recorder having a pair of flywheels which are provided with capstans coaxial therewith, respectively,
said tape-driving apparatus comprising;
a motor provided with a drive shaft;
rotatable means fitted to the motor drive shaft, rotatable therewith and including a first pulley coaxial with said motor drive shaft and a second pulley coaxial with said motor drive shaft
a first endless belt stretched across the pair of reel shafts and pressed against the outer circumferential surface of the first pulley in one direction; and
a second endless belt stretched across the pair of flywheels and pressed against the outer circumferential surface of the second pulley in the opposite direction,
wherein the deflecting forces which the first and second endless belts exert against the motor drive shaft are thereby offset.

4,460,137

BALLISTIC ARTILLERY PROJECTILE, THAT IS INITIALLY SPIN-STABILIZED

Kurt G. Andersson, Pudelgränd 10, S-132 62 Farsta; Gunnar E. Axelsson, Agavägen 24, S-181 38 Lidingö; Stig H. Bondesson, Olvontunet 10, S-181 48 Lidingö; Arne H. Bryngelsson, c/o Elmgard Johan Enbergsväg 9, S-171 62 Solna; Gunnar R. Flodin, Skogsvägen 50, S-122 32 Enskede, and Nils E. Bartelson, Furusundsgatan 12, S-115 37 Stockholm, all of Sweden

PCT No. PCT/SE81/00100, 371 Date Nov. 20, 1981, 102(e) Date Nov. 20, 1981, PCT Pub. No. WO81/02926, PCT Pub. Date Oct. 15, 1981
PCT Filed Mar. 30, 1981, Ser. No. 325,428
Claims priority, application Sweden, Mar. 31, 1980, 8002453
Int. Cl.³ F42B *15/16*
U.S. Cl. 244—3.27 7 Claims



1. A ballistic artillery projectile that is initially spin-stabilized and is provided with extendable fins designed to be extended after the projectile has covered a part of the trajectory, said projectile comprising:
(a) a projectile body;
(b) a plurality of fins attached to the projectile body;
(c) connecting means for pivotally attaching said fins to said body, said connecting means being non-rotatably received in each of said body and said fins and including portions plastically deformable in torsion to brake by plastic deformation the outward extension of said fins from said body caused by spin-induced centrifugal forces acting on said fins.

4,460,138

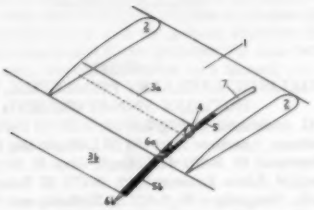
FLEXIBLE FLAP FOR AN AIRFOIL

Mithra M. K. V. Sankrithi, 417 Bellevue Way SE. #400, Bellevue, Wash. 98004

Filed Sep. 29, 1982, Ser. No. 428,308
Int. Cl.³ B64C *3/54*
U.S. Cl. 244—215 21 Claims

1. A trailing edge retractable flap for an airfoil, comprising
a flexible sheet flap,
an airfoil mounted roller,
and an airfoil mounted retractable flap side support member;
with means for the forward portion of said flexible sheet flap to be retracted around said airfoil mounted roller;

and with slide fastener means for the side edge of the deployed portion of said flexible sheet flap to



the deployed portion of said airfoil mounted retractable flap side support member.

4,460,139

CLAMP FOR FIXING ONE OR MORE FLUID CONDUITS

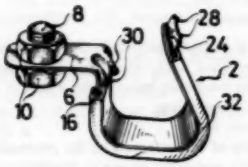
Bernd Bochen, Hochheim, and Karlheinz Jagstaidt, Raunheim, both of Fed. Rep. of Germany, assignors to General Motors Company, Detroit, Mich.

Filed Feb. 25, 1982, Ser. No. 352,109

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110688

Int. Cl.³ F16L *3/12*

U.S. Cl. 248—68.1 **4 Claims**



1. In a clamp for fixing one or more fluid conduits or the like, which has arresting means at the free end of a clamping strip, cooperating counter arresting means for locking the clamping strip around one or more fluid conduits or the like, and a reinforcing bead extending from a point near the opposite end of the clamping strip to a designated point of bending in the clamping strip,

the improvement comprising:

an angled mounting bracket at one end of the clamping strip,

the arresting means consisting of one or more narrow projections at an opposite end of the clamping strip,

said one or more narrow projections being formed at the front edge and in the plane of an obtusely angled end portion of a leg of the clamping strip leading from the designated point of bending,

the cooperating counter arresting means consisting of a corresponding number of appropriately shaped lugs formed out of the surface of the clamping strip at the transition of the angled attachment bracket and the clamping strip, and

the reinforcing bead extending into the region of the clamping strip from which the lugs are formed and up to commencement of the mounting bracket.

4,460,140

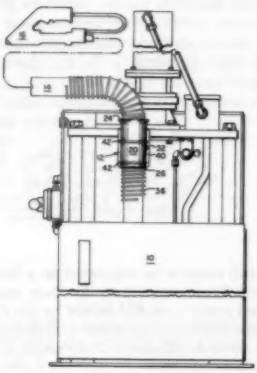
HOSE SUPPORT

Dario J. Ramazzotti, and Sherman E. Cohen, both of Atlanta, Ga., assignors to Nordson Corporation, Amherst, Ohio

Filed Sep. 30, 1982, Ser. No. 430,283

Int. Cl.³ A62C *23/04*

U.S. Cl. 248—75 **6 Claims**



1. A fluid applicator comprising:

a means for providing a pressurized supply of fluid;

a flexible hose having one end connected to said providing means and the other end connected to a dispenser;

a cylindrical tube mounted to said applicator, a helical spring positioned within said tube, said spring being of such a length so that the free ends thereof extend beyond each end of said tube and being less than the length of said hose; and

said hose passing through said spring, said spring supporting said hose away from said tube.

4,460,141

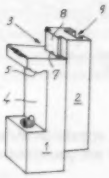
SELF-LOCKING SUPPORT CLAMP FOR MOUNTING ITEMS ON A SUPPORT BAR

Conny Svensson, Oskarshamn, Sweden, assignor to Elajo Invest Aktiebolag, Oskarshamn, Sweden

Filed Oct. 6, 1981, Ser. No. 309,057

Int. Cl.³ E04G *3/00*

U.S. Cl. 248—222.1 **9 Claims**

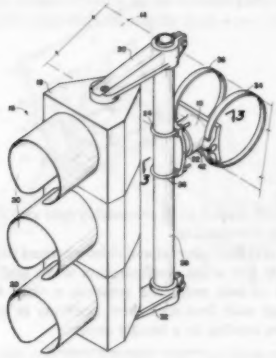


1. A support claim for releasably mounting items on a support bar which is fixedly mounted on a vertical surface, the support clamp comprising a locking body which can be engaged with and locked to a said support bar, a support body which co-operates with the locking body and which is displaceable linearly upwards and downwards in relation to the locking body, and between the locking body and the support body a locking means which is actuated so that the locking body can be released from the support bar when the support body is moved upwards in relation to the locking body and is locked when the support body is moved down in relation to the locking body.

4,460,142
BRACKET FOR SUPPORTING A SIGN TO A CYLINDRICAL POST

Blondale O'Rorke, 14000 N. Scott, Edmond, Okla. 73034

Filed Feb. 4, 1982, Ser. No. 345,807
Int. Cl.³ A47B 96/06
U.S. Cl. 248—231 6 Claims



1. A bracket for supporting a sign to a cylindrical post comprising:

a body portion having a forward end having means to receive a member for the support of a sign, the rearward end being adapted to engage the surface of a cylindrical post to which a sign is to be supported, a small diameter opening in the body portion, the axis of which is parallel to the rearward end and a shallow depth noncircular recess of larger diameter than the small diameter opening in the surface of the body portion coaxial with said small diameter opening and a slot in the body portion communicating with said small diameter opening;

a flexible band having the first end affixed to said body portion, the band extending around a post to which said body portion is affixed for holding a sign, the second end extending into said body portion slot; and

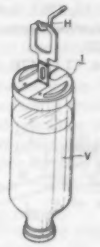
a bolt having an enlarged noncircular head non-rotatably receivable in said noncircular recess, the bolt having a slot therein and being received in said small diameter opening, the second end of said band being received in said bolt slot whereby said bolt may be rotated to wind said band thereon to tighten the band and body member against a post after which said bolt head may be driven into said shallow depth recess to retain the bolt in a nonrotatable position.

4,460,143
VIAL SUSPENDER

Tadahiro Ohama, Kyoto, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 16, 1981, Ser. No. 331,180
Claims priority, application Japan, Apr. 23, 1981, 56-59467[U]; Jun. 23, 1981, 27590; Sep. 14, 1981, 56-137206[U]
Int. Cl.³ A47B 91/00
U.S. Cl. 248—359 4 Claims

1. A vial suspender comprising a planar baseplate formed of plastic material and adapted on its underside to be attached to a vial bottom and a suspending portion formed integrally with said baseplate of the same plastic material and adapted to extend from the opposite side of said baseplate, said suspending portion comprising a first foldable portion notch-hinged at one end to said baseplate and a suspending strip formed as an integral continuation of said first foldable portion notch-hinged at one end to the other end of said first foldable portion, whereby said suspending portion may be folded substantially flat against said vial bottom but when extended, both said first

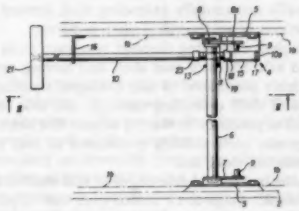


foldable portion and said sustaining strip extend upwardly from said baseplate at a substantially 90° C. angle.

4,460,144
VERTICALLY ADJUSTABLE SEAT FOR VEHICLES

Kenichi Kazaoka, Nagoya, and Yukifumi Yamada, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 23, 1981, Ser. No. 304,911
Claims priority, application Japan, Oct. 1, 1980, 55-140771[U]
Int. Cl.³ A45D 19/04
U.S. Cl. 248—397 14 Claims



1. A vertically adjustable seat for vehicles, comprising:

a shaft member;

an axle connected to said seat;

a lever member operatively connected to a rear end portion of said seat at a first end thereof and to said axle and connected with said shaft member at a second end thereof opposite said first end;

a female screw member forwardly and rearwardly movable and operatively connected to said second end of said level member by said axle;

a handle fixedly connected to a front end portion of said shaft member; and

means for supporting said shaft member at front and rear side portions of said female screw member and wherein said supporting means further comprises a portion adjacent said female screw member extending axially relative to said shaft member.

4,460,145

BOOK-HOLDER

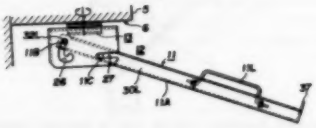
Masumi Ando, Kashiwa, Japan, assignor to Hukuba Kogyo Kabushiki Kaisha, Chiba, Japan

Filed Nov. 17, 1981, Ser. No. 322,250

Claims priority, application Japan, Oct. 14, 1981, 56-163996; Oct. 19, 1981, 56-166933

Int. Cl.³ A47B *19/00*

U.S. Cl. 248—447 **4 Claims**



1. A book holder comprising:

a longitudinal shelf having an upper surface adapted to support an opened book, said shelf having forward and rearward ends and spaced opposite upwardly extending side edges;

a bracket supporting said shelf and adapted to be mounted to depend from a mounting body, said bracket including an upper horizontal plate portion and spaced vertical plate portions extending downwardly from opposite sides of said horizontal plate portion;

swivel mechanism means, extending through said horizontal plate portion, for mounting said bracket on a mounting body such that said bracket and thereby said shelf are rotatable about a generally vertical axis with respect to said swivel mechanism means and the mounting body;

means for mounting said rearward end of said shelf on said bracket such that said shelf is movable with respect to said bracket between a non-use position, whereat said shelf extends generally horizontally, and a use position, whereat said shelf extends downwardly from said bracket in a forwardly inclined manner, said mounting means comprising:

L-shaped openings formed in rear positions of said vertical plate portions;

generally horizontally extending slots formed in forward portions of said vertical plate portions;

a first shaft extending through rearward-most portions of said side edges of said shelf and having opposite ends slidably positioned in said L-shaped openings; and

a second shaft extending through said side edges of said shelf at positions forwardly of said first shaft and having opposite ends slidably positioned in said horizontally extending slots; and

wings attached to said side edges of said shelf in a manner to enable said wings to be folded over said upper surface of said shelf and folded laterally outwardly therefrom when said shelf is in said use position thereof.

4,460,146

PORTABLE READING DESK

Guglielmo Raggiotti, Perugia, Italy, assignor to Interstudio Design s.a.s., Perugia, Italy

Filed Aug. 31, 1982, Ser. No. 413,431

Int. Cl.³ A47G *1/24*

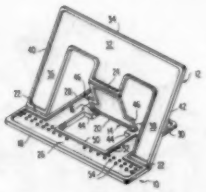
U.S. Cl. 248—456 **5 Claims**

1. A portable and foldable desk having an erected and a collapsed position and formed from a single thin, flat generally rectangular piece, said piece comprising:

(a) a first portion which serves as a horizontal support for the desk when the desk is in use having a front edge and having a plurality of detent notches spaced from one another at varying distances from said front edge;

(b) a second portion which serves as an angulated support for an object to be read when the desk is in use and is connected to said first portion by a fold line which is parallel to the front edge of said first portion; and

(c) a third portion which serves as a prop for said second portion when the desk is in use and which is connected to said second portion by a fold line which is parallel to the front edge of said first portion, said third portion being



sized and shaped to fit reasonably into said detent notches on said first portion,

wherein said first, second and third portions of said piece are foldable into a flat configuration when said piece is converted to said collapsed position, a void being defined between said first and third portions in said collapsed position serving as a handle means.

4,460,147

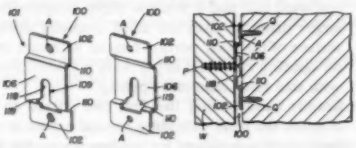
MOUNTING BRACKETS FOR SHELVES AND PANELS

Kathleen R. Macbain, Rte. 2, Box 82, Miller, Mo. 65707

Filed Jan. 5, 1981, Ser. No. 222,617

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—542 **15 Claims**



1. A bracket for mounting an article to a support member, said bracket comprising a first portion to be secured to said article; and a second portion having a keyhole shaped opening formed therein large enough to receive a head of a fastener for mounting to said fastener extending from said support member, said first and second bracket portions being spaced apart from each other by shoulder means so as to lie in separate planes, said keyhole opening extending through said shoulder means between said first and second bracket portions and at least through a part of said second portion to establish a slot in the second portion, said slot tending to retain said fastener during application of a force to the fastener acting along a common longitudinal axis of the keyhole shaped opening and slot.

4,460,148

BALANCER

Tadajiro Sasaki, 12-27 Tsumuri 3-Chome, Tsumuri-ku, Osaka 538, Japan

PCT No. PCT/JP80/00134, 371 Date Apr. 9, 1981, 102(e) Date Apr. 9, 1981, PCT Pub. No. WO81/00744, PCT Pub. Date Mar. 19, 1981

PCT Filed Jun. 17, 1980, Ser. No. 253,514

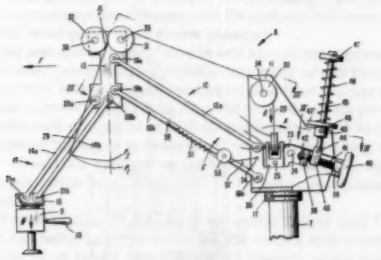
Claims priority, application Japan, Sep. 11, 1979, 54-117039

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—585 **3 Claims**

1. A balancer comprising a first bracket (11) being rotatable around a vertical axis; a first parallel link unit (12) being inclinable upwardly and downwardly in a vertical plane (O_1—O_1)

containing the rotating axis of the first bracket (11) and located in front of the bracket (11); a second parallel link unit (14) being supported by a second bracket (13) at the front end of the first parallel link units (12) and being swingable in the vertical plane (O_1—O_1) located under the second bracket (13); a third bracket (15) mounted at the lower end of the second parallel link unit (14) for holding an operating machine; an arm (23) supported by the first bracket (11) by means of a horizontal shaft extending perpendicularly to the vertical plane (O_1—O_1); a pulling member extending forwardly from a rear end thereof



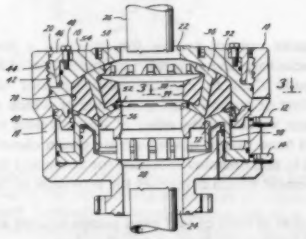
connected to the arm (23), passing over the faced peripheries of two adjacent front and rear guide wheel means, extending downwardly from the guide wheel means, and being connected to the portion of the second parallel link unit (14) distant from and located under the second bracket (13); a bolt (41) rotatably supported by the arm (23), said bolt (41) extending lengthwisely with respect to the arm (23), and being provided with a handle (40); a shiftable nut (43) on the bolt (41); and a spring (48) loading the shiftable nut (43) with the elastic force for pulling the pulling member; said nut (43) is shifted by turning the handle (40), thereby the balancer (8) is balanced.

4,460,149

ANNULAR BLOWOUT PREVENTER WITH UPPER AND LOWER SPHERICAL SEALING SURFACES

Gary R. Schaeper, and Richard A. Olson, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Continuation of Ser. No. 156,833, Jun. 5, 1980, Pat. No. 4,283,039. This application Jun. 19, 1981, Ser. No. 275,280
The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.
Int. Cl.³ E21B *33/06*
U.S. Cl. 251—1 B **14 Claims**



1. A blowout preventer comprising:

housing means defining an internal longitudinal bore, the centerline of said bore defining a longitudinal direction with respect to said blowout preventer;

means in said housing defining generally longitudinally facing opposed upper and lower guide surfaces, said guide surfaces being longitudinally and radially inclined generally parallel to each other;

seal means disposed generally between said guide surfaces, said seal means comprising—

an annular elastomeric body partially defining said bore, and

a plurality of circumferentially spaced rigid translation elements extending generally longitudinally through said elastomeric body, each of said translation elements having an upper end face slidably movable along said upper guide surface and a lower end face slidably movable along said lower guide surface; and

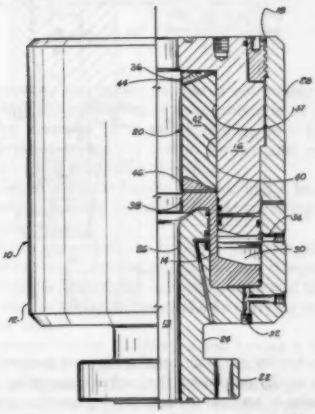
longitudinally movable actuator means for radially extending and retracting said seal means to restrict and open said bore such radial extension and retraction including simultaneous sliding movement of said upper and lower end faces along said upper and lower guide surfaces respectively.

4,460,150

ANNULAR BLOWOUT PREVENTER

Robert J. Turlak; Bolie C. Williams, III, and Gary R. Schaeper, all of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Dec. 28, 1981, Ser. No. 335,219
Int. Cl.³ E21B *33/06*
U.S. Cl. 251—1 B **8 Claims**



1. An annular blowout preventer comprising

an annular housing having an axially extending annular chamber therein and ports extending through said housing into opposite ends of the chamber,

means providing an inwardly projecting, downwardly facing shoulder within said housing,

an annular packer on the interior of said housing with one end against said shoulder, and

annular piston in said chamber and having an arm engaging the end of the packing opposite to the end engaging the shoulder,

alternate application of pressure to opposite ends of said chamber moving said piston against said packing to deform it between the piston and said shoulder into an inner sealing position and away from the shoulder to allow said packer to relax to its open position,

said packer comprising

a resilient deformable annulus having an inner periphery, and

a plurality of irising inserts embedded in the upper end of the resilient body and having a lower surface which is continuously tapered upwardly and outwardly so that their inner ends have increased thickness which extend partially along the length of the annulus on its inner peripheral surface a distance substantially less than the axial length of the annulus when fully deformed,

each insert being generally triangular shaped in plan view, skewed to the axis of the packer and in abutment with each other,

said resilient annulus engaging the tapered surfaces of said inserts to move said inserts inwardly at their inner ends in a pivoting movement with their outer edge remaining near the outer edge of said resilient annulus.

4,460,151

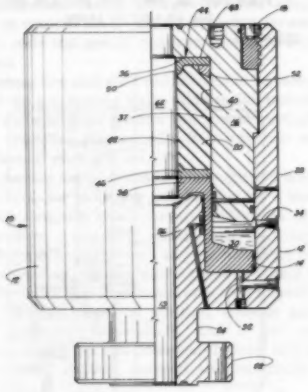
ANNULAR BLOWOUT PREVENTER

Bolie C. Williams, III, Houston, Tex., and Richard M. Church, Jr., Patterson, La., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Dec. 29, 1981, Ser. No. 335,504

Int. Cl.³ E21B *33/06*

U.S. Cl. 251—1 B **7 Claims**



1. A packer for use in an annular blowout preventer having means for axially deforming the packer comprising

an annulus of resilient material having an inner periphery,

a ring embedded around the upper exterior of said annulus, and

a substantially circular series of rigid inserts arranged on and bonded to the upper end of the annulus,

each insert having a flat body portion and a stem portion depending from the inner end of the body portion, the flat body portion of said inserts lying in a plane generally perpendicular to the axis of said annulus with the radial outermost portions overlying said ring and with the radially innermost ends of the body portions being substantially adjacent to the inner periphery of said annulus when the annulus is unconstricted and being generally triangular shaped, skewed to the packer axis and in abutment with each other, said stem portion extending a distance downward in the annulus substantially less than the compressed length of the annulus when constricted,

a portion of the resilient annulus is positioned between the ring and the stem portions of the inserts,

said inserts being responsive to the axial compression of said annulus to cause them to pivot to a position with their inner ends supporting a reduced inner diameter of said annulus as said inner periphery is constricted with radial inward extension of said annulus when it is deformed axially and having their outer ends supported by said ring to ensure that the inner portions do not pivot in an axial direction when said annulus is constricted.

4,460,152

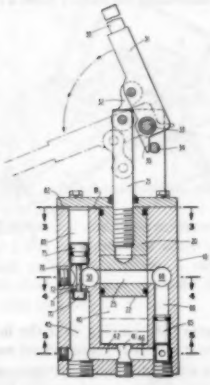
HAND PUMP WITH AUTOMATIC LOCK-OUT

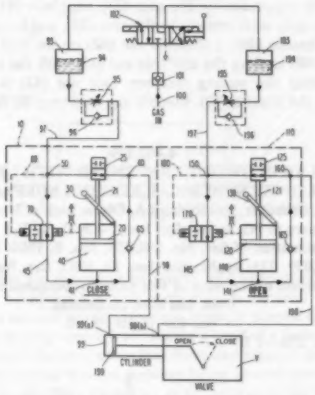
David A. DiPasquale, Lynchburg, and James J. Hammer, Forest, both of Va., assignors to Philadelphia Gear Corporation, King of Prussia, Pa.

Filed Dec. 15, 1982, Ser. No. 450,100

Int. Cl.³ F16D *31/02*; F16K *31/12*

U.S. Cl. 251—26 **12 Claims**





1. A remote control system for actuating a main valve wherein a selector valve controls the application of high pressure hydraulic fluid to a main valve actuator selectively through a first or second hand pump one of which is used to open the main valve and the other of which is used to close it, each of said hand pumps having a main piston chamber and a main piston in said chamber mounted for down and up strokes, the improvement which comprises the provision of the following:

a. an IN port in each of said hand pumps located at one side of said hand-pump main piston chamber;

b. means connecting said IN port to a source of hydraulic fluid which is either under very low pressure or under high pressure according to the position of said selector valve;

c. an OUT port in each of said hand pumps located at the other side of said hand-pump main piston chamber;

d. means connecting said OUT port to said main valve actuator;

e. a cross passageway providing hydraulic fluid communica-

tion across said hand-pump main piston between said IN port and said OUT port when said hand-pump main piston is in an upper position;

f. a first passageway located radially outward of said hand-pump main piston chamber for providing hydraulic fluid communication between the bottom of said hand-pump main piston chamber and said OUT port;

g. one-way means in said first passageway blocking hydraulic fluid flow from said OUT port to the bottom of said hand-pump main piston chamber;

h. a second passageway located radially outward of said hand-pump main piston chamber for providing hydraulic fluid communication between said IN port and the bottom of said hand-pump main piston chamber;

i. a valve seat and a poppet valve in said second passageway;

j. an air passageway located radially outwardly of said hand-pump main piston chamber and extending from the top of said hand-pump main piston chamber toward said IN port;

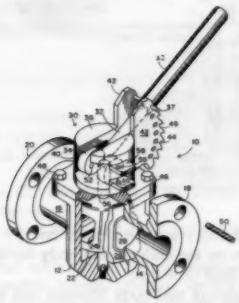
k. a small lock-out piston in said air passageway, said lock-out piston having a cross-sectional area corresponding to that of said air passageway in which it is located, said lock-out piston being connected by a shaft to said poppet valve;

l. the lower surface of said lock-out piston facing said IN port and being larger in area than the surface area of said poppet valve facing said valve seat, whereby when high pressure hydraulic fluid is applied to said IN port, a differential hydraulic pressure is applied to said lock-out piston sufficient to move said lock-out piston upwardly to seat and close said poppet valve, thereby to cut off fluid communication from said IN port to the bottom of said hand-pump main piston chamber.

4,460,153
LEVER OPERATOR FOR A VALVE CONTROL AND ACTUATING MECHANISM

Kenneth R. Williams, Huntington Beach, Calif., assignor to Aerojet-General Corporation, La Jolla, Calif.

Filed Dec. 11, 1981, Ser. No. 329,647
Int. Cl.³ F16K *35/02, 31/52*
U.S. Cl. 251—99 **15 Claims**



1. An improved operator apparatus primarily for use in a plug-type valve, the valve being of the type in which a tapered plug is raised vertically to unseat associated slips and then rotated to the valve open position for opening the valve and in which the opposite sequence of motions of the plug are effected for closing the valve, the plug having a trunnion through which the vertical and rotational motions of the plug may be effected; the improvement comprising:

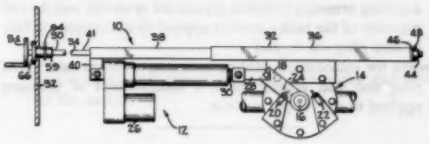
a lever arm connected at one end to said trunnion and adapted for arcuate motion relative to said valve in at least two substantially perpendicular planes, said connection of said lever arm to said trunnion effecting only vertical motion of said trunnion in response to arcuate motion of said lever arm in one of said planes, and effecting only rotational motion of said trunnion in response to arcuate motion of said lever arm in another of said planes;

a housing connected to said valve and substantially enclosing said end of said lever arm connected to said trunnion, said housing being substantially cylindrical and having a first slot in a vertical plane and a second slot in a horizontal plane, said lever arm extending through said first slot during said vertical motion and extending through said second slot during said horizontal motion.

4,460,154
MANUALLY OPERABLE OVERRIDE FOR USE WITH A LINEAR ACTUATOR

Calvin S. Kunkle, Tipton, Ind., assignor to FMC Corporation, Chicago, Ill.

Filed Nov. 25, 1981, Ser. No. 325,087
Int. Cl.³ F16K *31/05, 31/04, 31/44*
U.S. Cl. 251—130 **7 Claims**



1. An operating mechanism for use in controlling a valve means through the positioning of an operating lever attached to said valve means to move said operating lever from one operative position to another and to restrain said operating lever in one of said positions comprising:

a linear actuator means having a motor and a lead screw member positionably connected to said operating lever of said valve means;

a telescoping support means having a first elongated tube mounted to said valve means and a second elongated tube connected for telescoping movement with said first elongated tube, said second elongated tube carrying said linear actuator means;

manual control means including a rod having a threaded portion carried longitudinally inside said first and said second elongated tubes rotatably secured to an outboard end of said first elongated tube and rotatably supported in a threaded journal fixedly attached to said second elongated tube, said rod provided with a transverse aperture;

a guide stop flange having a tube provided with a pair of aligned transverse apertures aligned with said transverse aperture of said rod;

pin means insertable through said aligned apertures of said rod and said guide stop flange tube whereby said rod will be restrained from rotational movement when said pin means is inserted in said aligned apertures.

4,460,155
TANK DISCHARGE VALVE WITH PRESSURE ASSISTED SEAT

Russell G. Smith, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Continuation of Ser. No. 69,745, Aug. 27, 1979. This application Nov. 23, 1981, Ser. No. 323,888
Int. Cl.³ F16K *51/00*
U.S. Cl. 251—144 **5 Claims**

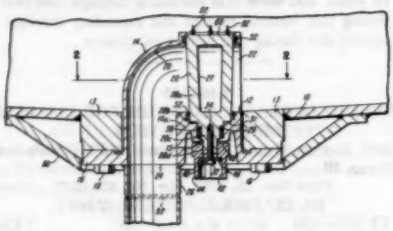
1. In a fluid tank, the combination comprising:

a valve body disposed substantially interiorly of the tank and secured to an opening therein;

a valve plug rotatably fitted with said valve body and being operative to control fluid flow through the opening in the tank in accordance to its position relative to the valve body, said valve plug having an upper surface continu-

ously, directly subjected to the weight and pressure of the tank contents;

a packing member subjecent to a lower surface of the valve plug which compresses in response to weight of the tank contents and sealingly interfaces with the valve plug with



a sealing pressure which is dependent upon the weight and pressure of the tank contents applied to said upper surface of said plug valve; and

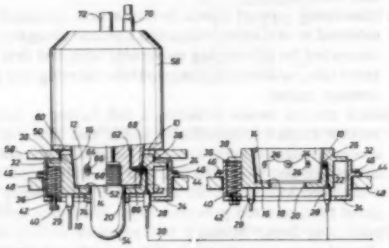
means for establishing sealing pressure between said valve plug and said sealing member independent of pressure applied to said upper surface.

4,460,156

WELLHEAD CONNECTOR WITH CHECK VALVE

Keith R. Hazelrigg, and Edward W. Locheed, Jr., both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed May 1, 1981, Ser. No. 259,421
Int. Cl.³ E21B *7/12*; F16L *37/28*
U.S. Cl. 251—149.3 **9 Claims**



1. Apparatus for connecting to a wellhead structure comprising:

a pair of matable bodies including a female body having generally laterally inwardly facing wall means defining a receptacle, and a male body adapted for insertion into and removal from said receptacle by movement in a generally longitudinal directional mode; said male body having generally laterally outwardly facing wall means for disposition adjacent said wall means of said female body when said male body is inserted therein; and each of said bodies having a respective fluid passageway therein, each of said passageways having a port opening through the respective one of said wall means, and said ports being generally in register when said bodies are matingly engaged;

and check valve means disposed in the port of one of said bodies, said check valve means being biased to a position closing said port, and comprising:

generally tubular housing means fixedly mounted in said port and defining a bore continuous with said passageway, said housing means further defining an annular valve seat area within said bore, and said bore having an enlarged diameter section adjacent said valve seat area;

a valve element reciprocably mounted within said enlarged diameter section of said bore for engagement with and retraction from said valve seat area, said valve element having an outer diameter greater than the inner diameter of said valve seat area but less than the inner diameter of said enlarged diameter section of said bore, whereby when said valve element abuts said valve seat area, said bore is blocked, and when said valve element is retracted from said valve seat area said bore is opened;

means resiliently biasing said valve element toward said valve seat area;

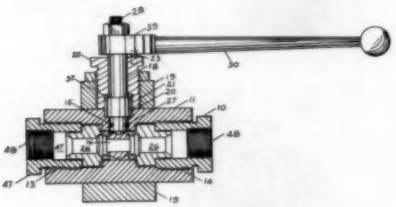
and actuator means movable in a generally lateral directional mode to open said port of said one body, said actuator means including a rod portion engaging said valve element and a head portion adjoining said rod portion, and when said valve element is abutting said valve seat area, protruding beyond said port of said one body for sliding engagement with the wall means of said other body, the outer diameter of said rod portion being less than the inner diameter of the surrounding portion of said bore in said housing means, and said head portion having perforation means therethrough communicating with the portion of said bore surrounding said rod portion of said actuator means.

4,460,157

HIGH PRESSURE BALL VALVE

Francis V. Marchal, Erie, Pa., assignor to Skinner Engine Company, Erie, Pa.

Filed Dec. 28, 1981, Ser. No. 334,871
Int. Cl.³ F16K *5/06*
U.S. Cl. 251—315 **14 Claims**



1. A valve comprising a one piece valve body,

connecting means on the ends of said body for connecting said body in a fluid flow line,

a flow passage through said body between said connecting means,

said flow passage between said connecting means comprising a pressure chamber,

an inlet opening and an outlet opening to said body communicating with said flow passage,

a lateral opening in said body,

valve seat means in said body at each side of said lateral opening,

a ball valve member supported on said seat members and a collar extending around said body substantially overlying the pressure chamber and tightened thereon whereby compressive stress is exerted on the outer periphery of the pressurized chamber in said body providing a pre-stress in said collar whereby the tensil strength of the pressurized portion of said body is increased.

4,460,158

LIFT FOR MOPEDS AND MOTORCYCLES

Matteo Chiesa, and Marco Chiesa, both of C.so Canale, 21, Alba, Italy

Filed Apr. 2, 1981, Ser. No. 250,148
Claims priority, application Italy, Apr. 23, 1980, 67635 A/80
Int. Cl.[3] B60P 1/48
U.S. Cl. 254—124 3 Claims

1. A lift for raising mopeds and motorcycles, comprising a base, a cylinder hinged on the base for vertical swinging movement about a horizontal axis, a first rod which is horizontal and which is supported on the base for rotation about its axis, a second rod secured to the first rod at a point intermediate the length of the first rod and extending upwardly from the first rod, the cylinder having a piston therein having a piston rod that is pivotally connected to the second rod remote from the first rod thereby to rotate the first rod about the horizontal axis of the first rod, third and fourth arms rigidly secured to each other and to the first rod at points disposed on opposite sides of the point of securement of the second rod to the first rod, said third and fourth arms being disposed at a substantial angle to the second rod, said first and second rods lying in a common plane, a fifth rod pivotally connected at one end to the base, a plate to which the fifth rod is pivotally connected at its end remote from the base, said third and fourth rods being pivotally connected to the plate at a point remote from the first rod, said fifth rod being parallel to and spaced from the plane of said third and fourth rods, and a support for mopeds and motorcycles carried by said plate.

4,460,159

OPTICAL CABLE AND CABLE PULLING ATTACHMENT ASSEMBLIES

Leonard J. Charlebois, Kanata, and Fred A. Huszarik, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

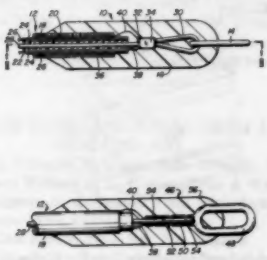
Filed Oct. 9, 1981, Ser. No. 309,976
Int. Cl.[3] B65H 59/00; E21C 29/16; H02G 1/08
U.S. Cl. 254—134.3 R 3 Claims

1. An optical cable and cable pulling attachment assembly comprising:

an optical cable having optical waveguides, a substantially inextensible tensile strength member extending axially along the cable length to provide tensile strength to the cable, and an exterior jacket, the cable also having one end at which the strength member has an end portion projecting axially beyond the end of the jacket;

a pulling eye secured at a region of connection to the projecting portion of the strength member by the use of a sleeve which is disposed around the projecting portion of the strength member and has at least one crimp to grip the strength member, and the pulling eye devoid of any part which seals directly around the jacket; and

a moulded plastic encapsulation which encapsulates the end of the cable, an end portion of the jacket, and at least the part of the projecting portion closest to the cable together with the region of connection and the crimped sleeve to prevent relative movement of the eye and strength member and to resist any tendency for the crimp to open under a tensile load, the encapsulation formed from a molten material having a moulded outer surface and providing a seal against fluid leakage between the exterior and interior of the cable.

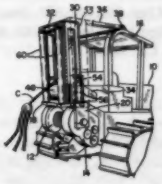


4,460,160

CHOKER FAIR-LEAD ASSEMBLY FOR TRACTORS

Darrell A. Tillotson, P.O. Box 65, White Salmon, Wash. 98672

Filed Jun. 25, 1982, Ser. No. 391,998
Int. Cl.[3] B66D 1/36, 3/08
U.S. Cl. 254—386 5 Claims



1. A choker fair-lead assembly for tractors of the type having a winch drum on one end thereof for operating choker cables, said assembly comprising

a stationary upright frame assembly comprising a a pair of side frames,

mounting means arranged to mount said side frames on a tractor adjacent to and at opposite ends of the winch drum,

a vertical slot in each of said side frames,

a horizontal axis fair-lead drum having opposite ends and arranged for engagement by choker cables from the winch drum,

guide means on the ends of said fair-lead drum slidably engaged in said slots for providing vertical slidable adjustment of said fair-lead drum on said side frames to raise and lower the choker cables,

and vertically operating drive means operably connected to said fair-lead drum and arranged for support on the tractor,

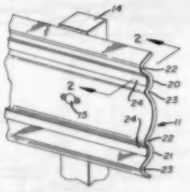
said drive means being extendable and retractable to move and hold said fair-lead drum at selected vertical positions on said side frames.

4,460,161

GUARD RAIL AND REFLECTIVE STRIP

Joseph R. Grenga, 5498 Glenwood Ave., Youngstown, Ohio 44512

Filed Mar. 2, 1983, Ser. No. 471,505
Int. Cl.³ A01K 3/00; E01F 15/00
U.S. Cl. 256—13.1 4 Claims



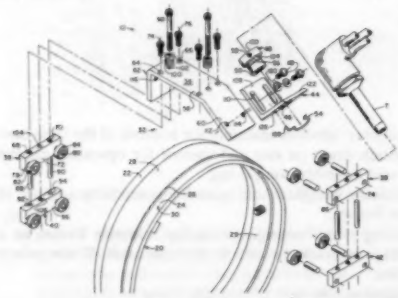
1. A guard rail and reflective strip for highway use in combination; a guard rail having a pair of longitudinally extending cross sectionally compound curved portions defining pairs of vertically spaced convex surfaces and at least one concave surface between said pairs of convex surfaces, said concave surface defines a generally parabolic surface, each of said pairs of vertically spaced convex surfaces defining a parabolic concave surface therebetween, a light reflecting strip comprising a base, a light reflecting material on one surface of said base, and an adhesive back on the other surface of said base, said base formed of a synthetic resin having an elastic quality, said flexible light reflective strip affixed continuously to said concave surfaces of said guard rail and means for securing said guard rail to a support means.

4,460,162

TORCH GUIDING SYSTEM FOR FLAME CUTTING OF PIPE

Richard W. Rusk, Rte. #1, Box 336, Simpson Dr., Waldorf, Md. 20601

Continuation-in-part of Ser. No. 341,821, Jan. 22, 1982, Pat. No. 4,414,041. This application Nov. 8, 1983, Ser. No. 549,770
Int. Cl.³ B23K 7/04, 7/10
U.S. Cl. 266—56 16 Claims



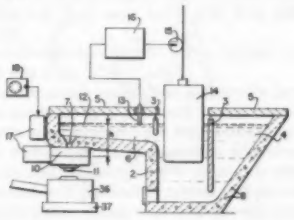
1. In a system for guiding a torch for shaping a pipe end with flame from the torch and having: a ring with track structure, a torch-carrying assembly with a portion configured for manual movement around the ring guiding on the track means, means for mounting the ring coaxially about the pipe, means permitting rotation of the torch about the axis of said flame, and means for adjusting torch position relative to the pipe axis, the improvement comprising: means for connecting the torch carrying assembly to the ring for permitting said manual movement free of manual constraint of the torch-carrying assembly to the ring, and means for detachably attaching a torch for carriage by said torch carrying assembly.

4,460,163

DEVICE AND FURNACE FOR DISCHARGING MEASURED QUANTITIES OF MOLTEN METAL

Karl-Otto Hornung, Hombrechtikon, Switzerland, assignor to Stopinc Aktiengesellschaft, Baar, Switzerland

Continuation of Ser. No. 227,980, Jan. 23, 1981, abandoned. This application Mar. 16, 1983, Ser. No. 475,922
Claims priority, application Switzerland, Jan. 24, 1980, 562/80
Int. Cl.³ C21C 5/52; B22D 39/02, 39/06; C21D 11/00
U.S. Cl. 266—95 22 Claims



1. A furnace, such as a holding or smelting furnace, for discharging separate measured quantities of molten metal during successive discharge periods, said furnace comprising:

a furnace chamber adapted to contain therein molten metal having a free melt level exposed to substantially atmospheric pressure;

melt outlet means, extending from said chamber at a level below said free melt level, for allowing discharge of said molten metal downwardly from said chamber due to the hydrostatic pressure of said molten metal;

sliding gate valve means, mounted adjacent said melt outlet means, for covering and uncovering said melt outlet means to thereby respectively block and unblock said discharge of molten metal from said chamber;

regulating means for operating said sliding gate valve means between blocking and unblocking positions thereof at a predetermined time cycle, thereby defining separate, successive periods of discharge of said molten metal from said furnace chamber; and

control means, operable independently of the operation of said regulating means, for maintaining said free melt level at a constant level above said melt outlet means during discharge therefrom of said molten metal, and thereby for ensuring the discharge of said molten metal at a controlled uniform flow rate during each of said separate, successive discharge periods.

4,460,164

APPARATUS FOR REFINING OF STEEL MELTS

Bertil G. Tivelius, Viken, Sweden, assignor to Scandinavian Lancers Aktiebolag, Hoganas, Sweden

Division of Ser. No. 367,796, Apr. 12, 1982. This application Feb. 18, 1983, Ser. No. 467,901
Int. Cl.³ C21B 7/22
U.S. Cl. 266—158 8 Claims

1. Apparatus for treating molten metal, said apparatus comprising:

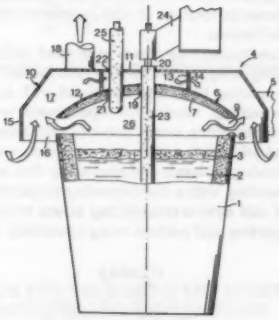
a ladle for containing a molten metal to be treated, said ladle having an upper edge;

a hood arranged above said ladle, said hood comprising a heat shield essentially covering completely said ladle and having a ceramic lining facing said molten metal in said ladle, said heat shield and said upper edge of said ladle being spaced from each other to define a gap between said heat shield and said upper edge of said ladle;

a screen forming an all-enveloping roof over said heat shield and extending over and below said gap to define a circum-

ferential opening between said screen and said ladle below said gap;

spacing means extending between said screen and said heat shield for maintaining said screen and said heat shield spaced apart with respect to each other to define a chamber between said screen and said heat shield, said gap communicating with said chamber for passage of gases from said ladle through said gap to said chamber, said circumferential opening defining an inlet opening for ambient air to said chamber;



at least one lance means for introducing at least one gas into said molten metal in said ladle and/or to a ladle area above said molten metal;

at least one exhaust means communicating with said chamber for exhausting gases which pass from said ladle area above said molten metal into said chamber through said gap, and also for exhausting air which is sucked from ambient atmosphere into said chamber mainly through said circumferential opening; and

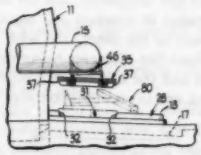
at least one aperture means provided in said hood for lowering at least one said lance means into said ladle.

4,460,165

REMOVABLE HATCH FOR BLAST FURNACE IRON THROUGH HOOD

Anthony Cook, Homewood, and Robert P. Winters, Olympia Fields, both of Ill., assignors to Interlake, Inc., Oak Brook, Ill.

Filed Jun. 20, 1983, Ser. No. 506,111
Int. Cl.³ C21B 7/12
U.S. Cl. 266—158 **19 Claims**



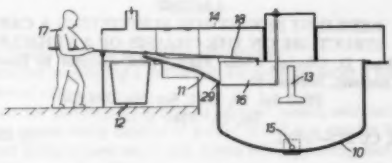
1. In emission control apparatus for a blast furnace system including a blast furnace having a discharge notch and an iron trough adapted to carry a molten stream of slag and metal from the discharge notch to a skimmer plate for separating the slag from the metal, the improvement comprising: an elongated hood covering the iron trough and extending the entire length thereof from the discharge notch to the skimmer plate, a hatchway in said hood adjacent to the discharge notch and extending along only a portion of the length of said hood, a removable hatch cover on said hood separable therefrom for opening and closing said hatchway, drive means remote from the iron trough, means coupling said drive means to said hatch cover for effecting movement thereof between a normal lowered position closing said hatchway and a raised position spaced from said hood and opening said hatchway, and guide surfaces on said hood and on said hatch cover for cooperation to guide said hatch cover to its lowered position, said hatch cover in the lowered position thereof cooperating with said hood for effectively preventing ventilation of the iron trough, said hatch cover in the raised position thereof being spaced well above the trough so as to afford substantially unobstructed access to the uncovered portion of the iron trough and to the discharge notch.

4,460,166

METHOD OF REMOVING DROSS FROM A LEAD REFINING POT

Duncan Ritchie, Glasgow, Scotland; John R. Mills, Newcastle-upon-Tyne, and William R. D. Couper, Tyne & Wear, both of England, assignors to Associated Lead Manufacturers Ltd., Newcastle-upon-Tyne, England

Filed Feb. 4, 1983, Ser. No. 464,003
Claims priority, application United Kingdom, Feb. 11, 1982, 8203987
Int. Cl.³ F27D 3/15
U.S. Cl. 266—228 **4 Claims**



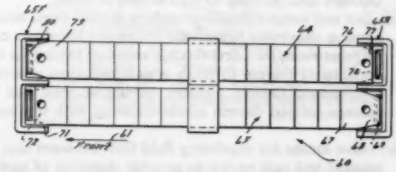
1. A lead refining pot for containing a batch of molten lead to be refined and including a stirrer for stirring the lead in the pot, comprising a ramp fitted to the rim of the pot and extending upwardly and outwardly from said rim in combination with a rake, power-operated mechanism external to the pot for operating said rake to scrape dross from the surface of the lead in the pot and up the ramp, and a controller for said power-operated mechanism for varying operation thereof in accordance with variations in the level of lead within the pot.

4,460,167

LEAF SPRING END MOUNTING STRUCTURE

John E. Silvis, and William W. Fant, both of Fayetteville, Ark., assignors to NI Industries, Inc., Novi, Mich.

Filed Oct. 19, 1981, Ser. No. 312,922
Int. Cl.³ B60G 11/02
U.S. Cl. 267—42 **1 Claim**



1. A multiple-group, full elliptic leaf spring suspension system, comprising at least a pair of end block members, and at least two adjacent pairs of spaced-apart coextensive primary leaf springs, each opposite respective end of said pairs of leaf springs being adjacent and being in load-transferring engagement with one of a pair of end block members at opposite ends of said suspension system;

each of said end block members including a plurality of end slots extending therethrough corresponding to the adjacent pairs of primary leaf springs, an end wall forming a portion of the respective peripheries of each of said end slots, generally parallel side walls extending in a direction generally perpendicular to said end wall for receiving said respective leaf spring ends therebetween, and generally convex opposite load-transferring surfaces on said end

block members, each of said respective leaf spring ends engaging one of said load-transferring surfaces at an angle relative thereto, said angle decreasing in response to increased resilient deflection of said leaf springs resulting from an increased load thereon, whereby the area of engagement between each leaf spring end and the corresponding load-transferring surface increases as said load on said leaf springs is increased;

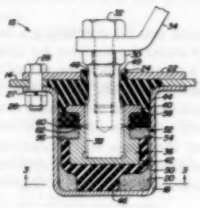
each of said primary leaf springs having only one flanged end protruding through one of said end slots in one of said end block members with said end walls of said end block members being adapted for abuttingly engaging the respective flanged ends of said leaf springs, said flanged ends in each pair of said primary leaf springs being located at opposite ends of said suspension system, each pair of coextensive primary leaf springs being oriented with its respective flanged ends in an inverted relationship relative to the respective flanged ends of its adjacent coextensive pair of leaf springs, thereby limiting the relative movement of said end block members and the respective ends of said coextensive pairs of leaf springs.

4,460,168

RESILIENT MOUNT FOR SUPPORTING A CAB STRUCTURE ON THE CHASSIS OF A VEHICLE

Richard D. Obadal, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 19, 1982, Ser. No. 399,636
Int. Cl.³ F16F 9/14
U.S. Cl. 267—140.1 **22 Claims**



1. A resilient mount for supporting a first member on a second member, said mount comprising:

(a) a housing securely attached to said second member and having an opening formed in a top surface thereof, said housing containing a quantity of fluid;

(b) a fitting positioned within said housing therein;

(c) a stem securely attached at one end to said first member and at an opposite end to said fitting, said stem passing through said opening formed in said housing;

(d) first and second flexible members tightly fitted into said housing above and below said fitting and forming a cavity therebetween, said first flexible member having an opening formed therein through which said stem passes and said second flexible member having at least one fluid passage formed therein communicating with said cavity; and

(e) valve means for regulating fluid flow between said fluid passage and said cavity to provide damping of said first member relative to said second member.

4,460,169

DEVICE FOR PACKING SHEET-LIKE ELEMENTS

Angelo Bartesaghi, 22, via Caduti a Fossoli, Lecco (Como), Italy

Filed Mar. 19, 1982, Ser. No. 360,091
Claims priority, application Italy, Mar. 27, 1981, 20764 A/81
Int. Cl.³ B65H 31/12, 29/26
U.S. Cl. 271—192 **11 Claims**

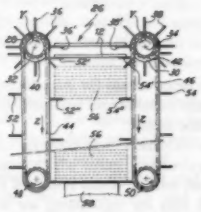
1. A device for gathering sheet-like elements, at least cut to size and optionally folded, in reciprocal superimposition to form packets having a predetermined number of sheet-like elements, the device comprising in combination:

(a) feed means for feeding said sheet-like elements at a constant speed and at constant intervals in a predetermined direction;

(b) distributing means for receiving said sheet-like elements from said feed means, and for vertically laying said sheet-like elements being received in superimposition to form a packet of a predetermined number of said sheet-like elements, and said distributing means comprising:

(1) a pair of counter-rotatable spaced parallel bodies, each having a corresponding plurality of planar straight projecting blades arranged for receiving each sheet-like element on a respective pair of said blades and for feeding each sheet-like element to form said packets by synchronous rotation of said counter-rotatable spaced parallel bodies,

(2) a motion-transmitting means associated with each counter-rotating body, with a driving gear located below each counter-rotating body also associated with said each motion-transmitting means, for operatively moving each motion-transmitting means between said counter-rotating body and said driving gear, and each motion-transmitting means having a plurality of projecting fins, each capable of cooperating with a corresponding projecting fin of the other of said motion-transmitting means to form a means for supporting said packets being assembled, and



(3) the fins, when horizontally aligned, being spaced from adjacent fins of the same motion-transmitting means by a distance equal to the height of the packets having a predetermined number of sheets to be formed, and the fins being arranged to be synchronized, when in the movement, with the movement of the blades of said counter-rotating bodies, and wherein the distance between two adjacent fins in the vertical direction is equal to n times the step between the blades of the counter-rotating bodies, with n being the number of sheet-like elements to form each packet; and

(c) drive means associated with said feed means and said distributing means for feeding said sheet-like elements at a constant speed and frequency, and for driving said counter-rotating bodies at constant and equal angular speeds, one with respect to the other, and with the frequency of feeding the sheet-like elements being determined by the angular speed and the number of blades of the counter-rotating bodies, and in coordination with the movement of the blades.

4,460,170

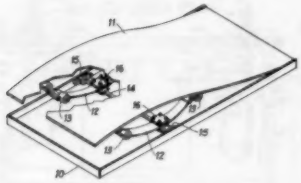
VAULTING BOARDS

Duane R. Lundberg, Jefferson, Iowa, and Joseph S. Thomas, Jr., Croton on Hudson, N.Y., assignors to AMF Inc., White Plains, N.Y.

Filed May 28, 1982, Ser. No. 383,059
Int. Cl.³ A63B 5/08
U.S. Cl. 272—65 **6 Claims**

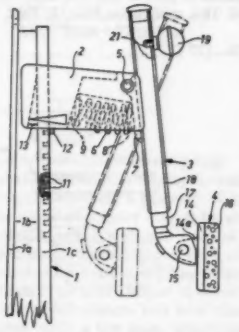
1. In a vaulting board device with a base frame and an overlying spring board connected at one board end to a frame end in which the board slopes up from the connection to be spaced from the frame, the improvement conprising a pair of bowed leaf springs positioned between the frame and the board along opposite sides thereof, the spring centers being connected to opposite sides of the frame by a pivotal mounting which com-

prises clamp means connected to the centers of said springs, short pivot shafts affixed to said clamp means, and means



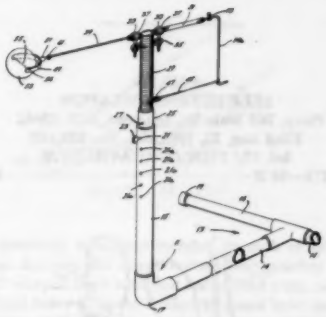
pivotally connecting said short pivot shafts to opposite sides of said frame.

4,460,171
DEVICE FOR EXERCISING THE MUSCLES DETERMINING BODY POSTURE
Into Plyhm, Helsinki, Finland, assignor to Marenko Oy, Helsinki, Finland
Filed Nov. 4, 1982, Ser. No. 439,236
Int. Cl.³ A63B *23/02*
U.S. Cl. 272—94 **4 Claims**



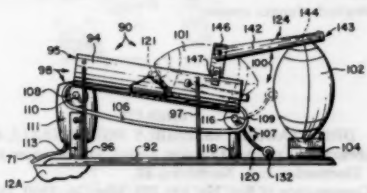
1. A device for exercising the muscles determining body posture comprising:
- a holding member formed of a vertical rail which is adapted to be mounted to a wall;
- a protruding slider means having a bearing surface and a pivot for mounting a rocker arm, said slider means being movably and lockably guided along said vertical rail;
- a support for pressing against the back of the head of the person using the exercising device;
- a rocker arm which is arranged to carry said support and is mounted on said pivot of said slider means to be thereby carried by said holding member at the protruding end of said slider means;
- a compression spring disposed between said bearing surface of said slider means and the said rocker arm, said compression spring being offset in the direction of said support in the region of the pivot for mounting said rocker arm; and
- adjustment means for said rocker arm whereby the length dimension of the rocker arm extending between the pivot mounting and the support is adjusted.

4,460,172
TENNIS TRAINING APPARATUS
John M. Hogan, 2185 Palomino Dr., Warrington, Pa. 18976
Filed Oct. 13, 1981, Ser. No. 310,573
Int. Cl.³ A63B *69/38*
U.S. Cl. 273—29 A **17 Claims**



1. A tennis training apparatus comprising:
- means for supporting a tennis ball for rotation about a horizontal axis;
- means for carrying said rotation support means, said carrying means being capable of guided travel in a straight line and being connected to said tennis ball supporting means;
- flexible means for positioning said carrying means in a predetermined relation to the ground;
- a tubular base having an upstanding pipe upon which said flexible positioning means is mounted; and
- said flexible positioning means includes a spring extending up from said upstanding pipe.

4,460,173
AUTOMATIC APPARATUS FOR POSITIONING FOOTBALLS FOR KICKING
Samuel R. Dumas, 215 Oakhurst St., El Dorado, Ark. 71730
Division of Ser. No. 273,344, Jun. 15, 1981, Pat. No. 4,424,969.
This application Dec. 6, 1983, Ser. No. 558,468
Int. Cl.³ A63B *67/00*
U.S. Cl. 273—55 B **10 Claims**



1. Automatic football positioning apparatus for place kicking practice; the apparatus comprising:
- base means adapted to be disposed upon a supportive surface;
- hopper means for containing a plurality of footballs, said hopper means secured to said base means;
- feed system means for drawing footballs through said hopper means;
- set up means for receiving footballs from said hopper means and for automatically positioning footballs from said hopper means in a generally vertical end to end orientation for subsequent kicking, said set-up means comprising:
  - extraction means for extracting footballs one at a time from said hopper means, and;

guide arm means for orienting footballs from said hopper means in said generally vertical end-to-end position relative to said base means in cooperation with said extraction means;

switch means responsive to football contact for controlling said set up means and said feed system means.

4,460,174

SELF DEFENSE WEAPON

Vince A. Perry, 269 Main St., Massena, N.Y. 13662

Filed Aug. 22, 1983, Ser. No. 525,159
Int. Cl.³ F41B *15/00*; A47G *29/10*
U.S. Cl. 273—84 R **8 Claims**

1. A self defense weapon comprising a hollow handle member, an end cap removably mounted on one end of the handle member, plunger means extending through the cap, a ring for receiving keys connected to the plunger means outside the end cap, an elongated flexible element of substantially greater length than the handle member normally stored in the interior of the member, one end of the flexible element being secured to the handle member and the other end thereof being secured to the plunger means inside the end cap, and coacting means on the handle member and plunger means for releasably holding the end cap in position on the handle member, the end cap being movable axially to remove it from the handle member whereby the plunger means and keys on the ring can be hurled at an attacker, the plunger means and keys travelling outwardly to the extent permitted by the full length of the flexible element which is withdrawn from the handle member by the attached plunger means.

4,460,175

DROP TARGET ASSEMBLY FOR PINBALL GAME

Edward P. Krynski, Downers Grove, Ill., assignor to Mylstar Electronics, Inc., Northlake, Ill.

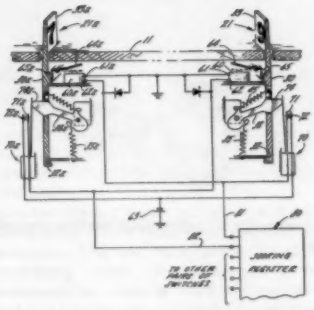
Continuation of Ser. No. 134,258, Mar. 26, 1980, abandoned, which is a continuation of Ser. No. 26,854, Mar. 15, 1979, Pat. No. 4,221,384. This application Dec. 17, 1981, Ser. No. 331,681
The portion of the term of this patent subsequent to Sep. 9, 1997, has been disclaimed.
Int. Cl.³ A63D *3/02*
U.S. Cl. 273—127 R **21 Claims**

1. In a pinball game machine, the combination comprising:

(a) a playfield for supporting a rolling ball;

(b) a drop target assembly, including a ball-engageable target, supported by the playfield and having means for advancing the target from a ball-engageable play position above the playfield to a non-ball-engageable dropped position below the playfield when the ball engages the target, said assembly including a latch mechanism for latching the target in the play position; and

(c) means, including a ball actuable switch assembly disposed on the playfield, for unlatching said latch mecha-



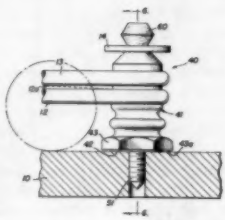
nism and advancing the target to the dropped position independently of the ball engaging the target.

4,460,176

POST CONSTRUCTION FOR PINBALL GAME

Albin Peters, Chicago, Ill., assignor to Wico Corporation, Niles, Ill.

Continuation-in-part of Ser. No. 224,850, Jan. 14, 1981, abandoned. This application Mar. 2, 1982, Ser. No. 353,878
Int. Cl.³ A63F *7/12*
U.S. Cl. 273—127 C **12 Claims**



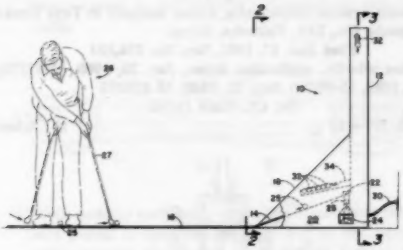
1. A post construction for use in a pinball game having a playfield board for supporting a rolling pinball thereon, said post construction comprising an elongated unitary one-piece post body having a longitudinal axis, said post body having a length substantially greater than its transverse diamensions, and a stud integral with said post body and having an externally threaded portion extending from one end of said post body substantially coaxially therewith, said threaded portion being adapted for threaded engagement with the associated playfield board for mounting said post body thereon in a mounted position with said one end in contact with the playfield board, said post body having a driving portion thereon having an external driving surface shaped and dimensioned to facilitate gripping thereof by an associated driver for driving said stud into threaded engagement with the playfield board, said driving portion being spaced a slight distance from said one end of said post body and extending laterally outwardly therebeyond around the entire perimeter thereof, whereby when said post body is disposed in its mounted position said driving portion is spaced from the playfield board and conceals said one end of said post body.

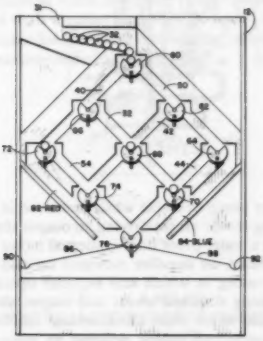
4,460,177

GOLF GAME

Claude J. Slayton, 1321 S. Winston, Tulsa, Okla. 74112

Filed May 4, 1983, Ser. No. 491,354
Int. Cl.³ A63B 69/36
U.S. Cl. 273—176 FA **10 Claims**





1. A game for one or more players comprising:

a vertically oriented framework, a display formed as a part of said framework comprising a plurality of intersecting channels for the travel of counter objects by gravity, said channels oriented at an angle to said vertical, a scoring channel for each player of said game, each said scoring channel connected at the bottom with one or more of said intersecting channels, an inlet channel to receive one or a plurality of said counter objects, said inlet channel being in communication with a top most intersection of said intersecting channels; valve means at each intersection of said channels to control the direction of downward movement of said counter objects; and

a plurality of coded receptacles for a player driven object, an activator means within each receptacle actuated by said driven object; means to connect each of said activator means with a given valve means.

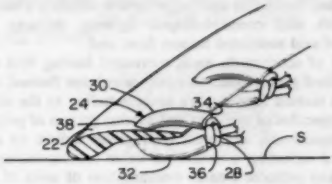
4,460,178

FRICTION AND WEAR REDUCING SYSTEM FOR LACROSSE STICKS

James W. Ulman, 4012 Federal Hill Rd., Jarrettsville, Md. 21084

Filed Dec. 1, 1982, Ser. No. 445,685
Int. Cl.³ A63B 59/02
U.S. Cl. 273—326 **2 Claims**

1. In a lacrosse stick system having a frame with a transverse front portion, netting including a plurality of knots defining a throwing string pocket at said transverse front portion, the transverse front portion having a plurality of holes, a respective loop of thong passing from said netting through each hole, each loop of thong having an upper run and a lower run, the upper run and the lower run of each loop of thong terminating together at a respective knot, the improvement comprising: means for reducing friction and wear on said transverse front portion, on each loop of thong and on said netting, in the form of skid-like structure protrusive below said transverse front



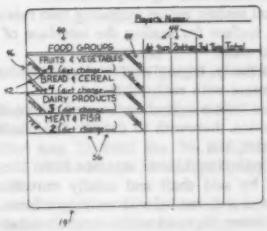
portion including: a resilient member on each of said loops, each loop drawing the respective resilient member thereon into a "U"-shaped bend with first and second arms, each "U"-shaped bend being adjacent a respective said hole, and means for retaining each resilient member in place, including each resilient member being a resilient tubular member.

4,460,179

EDUCATIONAL TARGET GAME

Linda B. Hafer, 9218 Rockefeller, Springfield, Va. 22153

Filed Sep. 30, 1982, Ser. No. 430,252
Int. Cl.³ A63F 9/02
U.S. Cl. 273—402 **8 Claims**



1. A game comprising:

a first group of projectiles comprising a plurality of differently shaped soft projectiles, each projectile in said first group shaped to simulate an item of food in a first food group;

a second group of projectiles comprising a plurality of differently shaped soft projectiles, each projectile in said second group shaped to simulate a food item in a second food group;

a target comprising a piece of sheet material with means defining a generally crescent-shaped opening therein, said opening being significantly larger than the largest dimension of any of said soft projectiles;

indicia means formed on said target face to simulate a human face with said crescent-shaped opening defining the mouth of said simulated human face; and

a plurality of scorecards, each scorecard having first and second food groups listed in a row or column thereof, said first and second food groups corresponding to the simulated projectiles of said first and second groups of projectiles, respectively, and each food group indicia on said scorecard including a numerical value corresponding to the desired periodic human consumption of units of the food group with which said numerical indicia is associated.

4,460,180

SEALING OF A SHAFT IN A CENTRIFUGAL PUMP AND A METHOD FOR EFFECTING THE SEALING

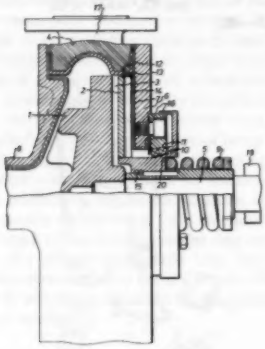
Pauli A. T. Koistinen, Joensuu, Finland, assignor to Outokumpu Oy, Helsinki, Finland

Filed Jun. 17, 1983, Ser. No. 505,223

Claims priority, application Finland, Jun. 22, 1982, 822245

Int. Cl.³ F16J *15/40, 15/46*

U.S. Cl. 277—3 **9 Claims**



1. A centrifugal pump comprising:

a housing defining a pumping chamber having an outlet and an inlet spaced from the outlet;

a rotatable shaft entering said chamber;

mechanical sealing means including two relatively movable sealing surface for sealing the interface of said chamber and said shaft;

means normally urging said sealing surfaces into sealing engagement with each other;

an impeller within said chamber and mounted on said shaft for rotation therewith to deliver fluid from said inlet to said outlet; and

auxiliary pumping blades separate from the impeller and carried by said shaft and axially movable thereon and associated with one of said sealing surfaces, said auxiliary blades being disposed within said chamber between said impeller and said sealing means so that upon rotation of said shaft, said auxiliary blades pump fluid from said interface toward said outlet to form an annular fluid ring hydrodynamically sealing said interface, and in response thereto move axially on said shaft to move said one sealing surface out of sealing engagement with the other sealing surface to minimize wear thereto during rotation of said shaft.

4,460,181

METHOD AND MECHANISM FOR CONTROLLING THE PRESSURE AT SHAFT-SEALING PART OF AN APPARATUS

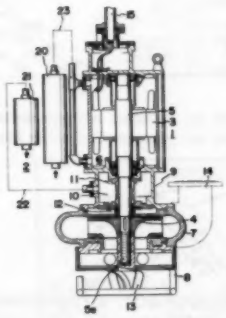
Toshinobu Araoka, Kitakyushu, Japan, assignor to Toyo Denki Kogyosho Co., Ltd., Fukuoka, Japan

Filed Jun. 17, 1981, Ser. No. 274,593

Claims priority, application Japan, Jun. 26, 1980, 55-87275; Jul. 1, 1980, 55-90291; Aug. 30, 1980, 55-120075

Int. Cl.³ F16J *15/40*

U.S. Cl. 277—12 **11 Claims**



1. An underwater pump operable while immersed in a body of water comprising motor means driving an output shaft, said motor means being a water proof fluid-immersed motor having a motor fluid chamber, an impeller mounted on said output shaft, an impeller casing in which said impeller operates, an interconnecting casing disposed about said output shaft and located between said motor fluid chamber and said impeller casing, said interconnecting casing defining an interconnect fluid chamber, first shaft sealing means disposed about said output shaft between said motor fluid chamber and said interconnect fluid chamber, second shaft sealing means disposed about said output shaft between said interconnect fluid chamber and said impeller casing, and a pressure control mechanism mounted on the underwater pump and adapted to be immersed in said body of water with the underwater pump, said pressure control mechanism comprising pressure-sensitive means operable to sense the pressure of the body of water about said underwater pump and transmit said pressure to said motor fluid chamber and to said interconnect fluid chamber such that both said motor fluid chamber and said interconnect fluid chamber are at the same pressure corresponding to the pressure of the water about the outside of the underwater pump, whereby equalized pressure is provided on opposite sides of said first shaft sealing means for various operating depths of the underwater pump.

4,460,182

SQUARE SEALING MEMBER FOR SLIP-TYPE DRIVE SHAFT

Ronald N. Brissette, Medina, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jul. 15, 1983, Ser. No. 513,943

Int. Cl.³ F16J *15/32;* **F16D** *3/06, 3/84*

U.S. Cl. 277—12 **8 Claims**

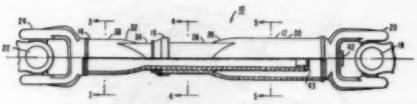
1. A one piece sealing member for a driveline assembly that includes a slip yoke having a square cross section at its seal mounting end, a shaft member with a generally square cross section welded to a yoke assembly, said sealing member comprising:

(a) four first walls being joined such that said first walls from

a square cross section with a square opening, said cross section forming a plane that is perpendicular to the longitudinal axis of said driveline assembly;

(b) four radially inwardly extending second walls joined to an end of a said corresponding first wall;

(c) radially inwardly converging truncated square pyramidal walls, the radially outward ends of said pyramidal walls being joined to the radially inner ends of said second walls;



(d) four radially outwardly extending reinforcing rib members joined to the radially inner end of said pyramidal walls wherein the square cross section formed by the intersection of said reinforcing rib members with said pyramidal walls is slightly less than the cross section of said shaft member that slidably passes therethrough; and

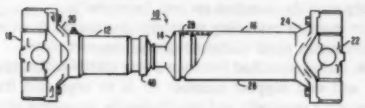
(e) means for mounting said sealing member at said sealing mounting end of said slip yoke.

4,460,183

RESILIENT SEALING MEMBER FOR SLIP-TYPE DRIVE SHAFT

Ronald N. Brissette, Medina, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jul. 15, 1983, Ser. No. 514,061
Int. Cl.³ F16J *15/32;* F16D *3/06, 3/84*
U.S. Cl. 277—12 **11 Claims**



1. A one piece sealing member for a driveline assembly that includes a slip yoke and a spline plug, each with a circular cross section, and tube and weld yoke assembly, said sealing member comprising:

a cylindrical wall;

a radially inwardly extending wall at one end of said cylindrical wall;

a radially inwardly converging truncated conical wall joined to said inwardly extending wall;

a radially outwardly extending reinforcing rib joined at the inner end of said truncated conical wall wherein the edge formed by the intersection of said reinforcing rib and said truncated conical wall defines a circular opening the diameter of which is slightly less than an unsplined section of said spline plug that passes therethrough; and

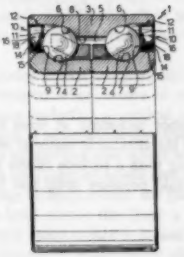
a means for mounting said sealing member on said slip yoke at a first end where said spline plug enters a cavity in said slip yoke.

4,460,184

SEAL ASSEMBLY COMPRISING TWO LIPS, ONE OF WHICH IS AXIAL AND THE OTHER RADIAL, AND A LABYRINTH

Franco Colanzi, and Angelo Vignotto, both of Turin, Italy, assignors to RIV-SKF Officine di Villar Perosa S.p.A., Turin, Italy

Filed Apr. 1, 1982, Ser. No. 364,266
Claims priority, application Italy, Apr. 15, 1981, 53143/81[U]
Int. Cl.³ F16J *15/32, 15/34*
U.S. Cl. 277—35 **9 Claims**



1. A seal assembly (10) adapted to be interposed between two axially-spaced concentrically-disposed annular members (2,3) movable relative to one another, in order to provide a seal between an internal cavity (5) between said annular members (2,3) and the outer area surrounding said cavity (5), comprising a first inner annular ring element (14) and a second annular ring (11), each of which is adapted to be mounted on a different one of said annular members (2,3) and rigidly connected to the first and second said annular elements (11,14) respectively, one of the annular elements being provided with a first (38) and second (40) internal sliding surfaces which are substantially perpendicular to each other, and a third annular sliding element (15) made of a soft and resilient material rigidly connected to said second annular element (11), and the resilient element (18) housed in an annular seating (3) formed in the said third annular element (15) on its internal surface, this third annular element (15) having a deformable external annular fulcrum section (34) adapted to slide on said first sliding surface (38) and a deformable annular lip (32) extending in a direction substantially perpendicular to said deformable projection (34) and adapted to slide on said second surface (40), the said resilient element (18) being positioned in the annular seating (30) which is offset from alignment with the projection (37) toward the annular lip (32) such that the said resilient element (18) is adapted to push with a predetermined downward pressure on the said projection (37) and also outwardly with lateral pressure on the said lip (32) to thereby press them into firm sliding sealing contact against said first and second sliding surfaces (38,40).

4,460,185

SEAL INCLUDING A NON-METALLIC ABRADABLE MATERIAL

Max F. Grandey, Monroe, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Aug. 23, 1982, Ser. No. 410,783
Int. Cl.³ F16J *15/16, 15/44;* F01D *11/08*
U.S. Cl. 277—53 **14 Claims**

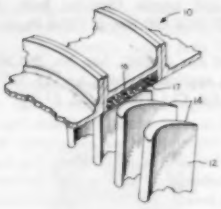
1. A gas turbine engine rotary seal comprising:

a first member and a second member disposed in juxtaposition and adapted for relative movement with respect one to the other;

a porous non-metallic abradable material secured at a surface of the first member and consisting essentially of:

(a) a halogenated hydrocarbon with at least about 60 weight % halogen;

(b) a solids content of about 50-90 weight %; and
(c) a heat of combustion of no more than about 4,000 BTU per pound;



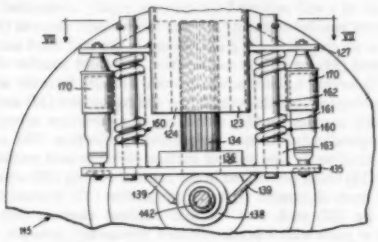
the second member including at least one projection directed toward the abradable material on the first member and cooperating with a surface of the abradable material to provide a fluid pressure drop seal between the members.

4,460,186

GUIDE WHEEL SUSPENSION FOR A THREE WHEEL SWEEPER

Donald L. Hildebrand, Union, and Mario J. Martinez, Elgin, both of Ill., assignors to Elgin Sweeper Company, Elgin, Ill.

Filed Feb. 8, 1982, Ser. No. 345,911
Int. Cl.³ A47L *11/24*; B62D *1/02*
U.S. Cl. 280—92 **17 Claims**



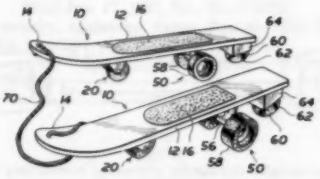
1. In a sweeper having a frame supporting a pair of widely spaced driven wheels, a dirt hopper mounted on the frame between the driven wheels, means carried on the frame for picking up sweepings and depositing the same inside of the dirt hopper, a steerable guide wheel unit mounted on the frame in a tricycle arrangement with respect to the driven wheels, said unit being rotated about a substantially vertical axis in response to steering inputs, the improvements comprising the guide wheel unit having a resilient suspension including a first member mounted on the frame for rotation about the axis of the member in response to the steering input, a second member having a lower end supporting at least one guide wheel, one of said first and second members being a tubular member and the other member being telescopically received in said one member and being freely movable axially therein, means for transmitting torque between said first and second members, and resilient means for suspending the load placed on said members so that the shock applied to the wheel unit is compensated for by the resilient suspension.

4,460,187

ROLLER SKI HAVING A BRIDLE

Key Shimizu, 1084, Kashio-cho, Totsuka-ku, Yokohama City, Kanagawa Prefecture, Japan

Filed Oct. 1, 1981, Ser. No. 307,662
Claims priority, application Japan, Oct. 4, 1980, 55-138888
Int. Cl.³ A63C *17/04*
U.S. Cl. 280—11.1 BT **4 Claims**



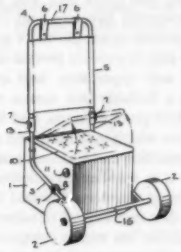
1. A pair of roller skis, each ski comprising:
a longitudinally extending long slender plate having a cambered front end and a base portion behind said front end; said base portion having a front portion adjacent said cambered front end and a rear portion behind said front portion;
a nonskid agent located on said base portion for receiving thereon a foot of a rider;
a reinforcement plate fixed to the bottom of said base portion;
a pivot bearing having a vertical coupler opening, fixed to said reinforcement plate at said front portion longitudinally spaced from said cambered front end;
a bracket and a flanged pivot held in said vertical coupler opening, said bracket being mounted to said pivot bearing by said flanged pivot, said bracket having a horizontal opening at a lower portion thereof extending transversely of said longitudinal direction rearward of said vertical coupler opening;
a support plate fixed to said bracket, said support plate and said pivot bearing defining a horizontal ringshaped race therebetween surrounding said flanged pivot;
a plurality of ball bearing filling said race so as to be subject to thrust;
a front shaft received in said horizontal opening and a front wheel rotatably mounted on said front shaft;
a support member extending vertically downward from said reinforcement plate rearward of said support plate;
a tension spring stretched between a rear end of said support plate and said support member so as to urge said front wheel into a vertically and longitudinally extending plane;
a cover mounted to said reinforcement plate so as to enclose said tension spring;
a base fixed to said base portion beneath said base portion rearward of and longitudinally spaced from said front wheel;
a resilient cushion fixed to said base beneath said base;
a pedestal fixed to said cushion beneath said cushion;
a rear shaft having two rotatable rear rollers at each end thereof mounted to said pedestal, said rear shaft and said two rear rollers constituting a rear wheel having outer wheel surfaces separated by a first distance greater than the width of said said long slender plate; said long slender plate and said reinforcement plate extending rearward of said rear wheel a second distance of between one third and one half of the longitudinal distance between said front wheel and said rear wheel; and
a saddle fixed to said reinforcement plate beneath said reinforcement plate rearward of said rear wheel, and a brake head fixed to said saddle beneath said saddle.

4,460,188

CART WITH SEAT AND STORAGE COMPARTMENT

John J. Maloof, 20 Greenwood St., East Hartford, Conn. 06118

Filed Apr. 15, 1982, Ser. No. 368,516
Int. Cl.³ B62B 1/12
U.S. Cl. 280—30 5 Claims



1. A combination cart and seat comprising the combination of:

a hollow enclosed base;

a handle pivotally mounted on said base and having top and bottom portions;

a pair of wheels mounted on the bottom portion of said handle;

a backrest mounted on the top portion of said handle;

said handle being arranged to swing from a cart position with its upper portion being generally horizontal and with the wheels being positioned below the base and resting on the ground to a seat backrest position with the upper handle portion being generally vertical and with the wheels being positioned above the bottom of said base;

hinge means connecting said upper and lower handle portions whereby said upper handle portion is foldable over the top of said base in a cart and seat storage position;

said wheels being relatively wide as compared to their diameter for supporting said cart and seat on soft surfaces; and

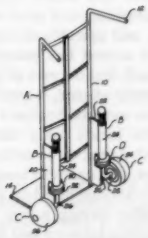
said base comprising a top seat means and a hollow storage compartment with the top seat means being hinged for access to the storage compartment.

4,460,189

MULTI-DIRECTIONAL PORTABLE HAND TRUCK

Frederick Goff, P.O. Box 671, Travelers Rest, S.C. 29690

Filed May 24, 1982, Ser. No. 381,356
Int. Cl.³ B62B 1/12
U.S. Cl. 280—47.27 9 Claims



1. A multi-directional portable hand truck for manually transporting a load comprising:

a generally vertical frame having a handle means carried adjacent one end thereof;

a cantilevered toe plate carried adjacent a bottom end of said frame for assisting in supporting said load on said truck;

a pair of wheel assemblies carried adjacent a lower end of said frame each wheel assembly including contoured wheel means having a generally semi-spherical surface supporting said load and frame above a floor over which said load and frame are moved;

index means connecting said contoured wheel means to said frame for locking said wheel means in a number of rotatable index positions relative to said frame;

said index means having a first position in which said wheel means is aligned relative to said frame for movement in forward directions;

said index means including a second position in which said wheel means is transverse to and aft of said first position for movement in a direction transverse to said forward movement; and

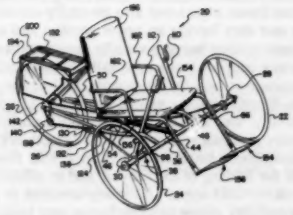
support means included in said index means which rotatably attaches the contoured wheel means to said index means; said support means including a vertical axis and a wheel support axis which is generally transverse to said vertical axis for rotatably supporting said wheel means offset from said vertical axis; said support means and contoured wheel means cooperating to support said toe plate of said frame and hence said load above the floor a greater vertical distance when said index means is in said second position and said wheel means are transversely aligned than when said wheel means are forwardly aligned in said first position and tilted to a corresponding degree over said contoured wheels.

4,460,190

HAND PROPELLED WHEELCHAIR

Erick M. Spiess, 5416 Mayflower La., Las Vegas, Nev. 89107

Filed Jul. 2, 1982, Ser. No. 394,651
Int. Cl.³ B62M 1/14
U.S. Cl. 280—247 9 Claims



1. A wheelchair comprising:

a frame;

a pair of spaced apart leading wheels rotatably mounted on said frame;

a single trailing wheel rotatably mounted on said frame;

a seat mounted by mounting means on said frame, said seat being located forward of said trailing wheel and between said leading wheels;

a chain drive assembly mounted on said frame and connected to said trailing wheel, said chain drive assembly for affecting rotation of said trailing wheel and movement of said wheelchair in respect to a supportive surface; and

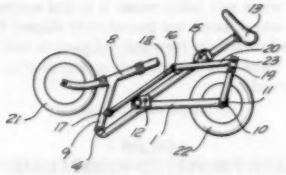
torque applying means mounted on said frame connected to said chain drive assembly, said torque applying means including a graspable handle assembly located directly adjacent said seat, longitudinal oscillatory movement of said graspable handle assembly operates through said chain drive assembly to rotate said trailing wheel, said torque applying means being connected to said leading wheels, lateral movement of said graspable handle assembly results in turning of said leading wheels for changing the direction of movement of said wheelchair.

4,460,191

FOLDABLE BICYCLE FRAME

Hideyuki Ishibashi, Ageo, and Kikuzo Takamiya, Kitamoto, both of Japan, assignors to Bridgestone Cycle Co., Ltd., Tokyo, Japan

Filed May 14, 1982, Ser. No. 378,291
Int. Cl.³ B62K *15/00*
U.S. Cl. 280—287 8 Claims



1. A foldable bicycle frame comprising a lower frame means, a front frame means pivotally mounted on said lower frame means, said lower frame means having fork elements supporting a rear wheel axle, a seat tube pivotally mounted on said lower frame means, a front support stay pivotally mounted on said front frame means and also pivotally mounted on said seat tube, a seat stay having an upper section and a lower section, said upper section being pivotally connected to said seat tube, said lower section being pivotally connected to said lower frame means at said fork elements, said upper and lower sections each comprising a pair of upper and lower stay members respectively, and locking plate means connecting said upper and lower sections and operable to selectively provide a pivotal connection between said upper and lower sections to provide for folding of the bicycle and to effect a rigid connection between said upper and lower sections to provide assembled operability of the bicycle frame, said locking plate means comprising a locking plate element having engaging portions engaging said pair of upper stay members to effect said rigid connection, said locking plate means further comprising a shaft element pivotally mounting said pair of upper stay members to said locking plate element, and biasing means on said shaft element biasing said upper stay members into engagement with said engaging portions of said locking plate.

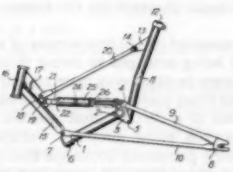
4,460,192

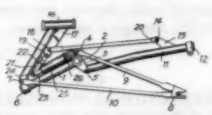
FRAME FOR FOLDING BICYCLE

Kikuzo Takamiya, Kitamoto, and Hideyuki Ishibashi, Ageo, both of Japan, assignors to Bridgestone Cycle Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 441,133
Claims priority, application Japan, Nov. 16, 1981, 56-182318
Int. Cl.³ B62K *15/00*
U.S. Cl. 280—287 9 Claims

1. A frame for a folding bicycle comprising a triangular base frame means having a triangular configuration, said base frame means comprising a pair of back forks and a pair of lower stays joined to a pair of rear end members respectively, a main pipe interconnected between said pair of back forks and said pair of lower stays, a quadric link means connected to said triangular base frame means, said quadric link means comprising said main pipe, a seat pipe, a front pipe, and an upper stay, first pivotal means pivotally connecting said main pipe and said seat pipe to provide pivotal movement of said seat pipe relative to said main pipe, second pivotal means pivotally connecting said main pipe and said front pipe to provide pivotal movement of said front pipe relative to said main pipe, third pivotal means pivotally connecting said front pipe and said upper stay to provide pivotal movement between said front pipe and said upper stay, fourth pivotal means pivotally connecting said seat pipe and said upper stay to provide pivotal movement between said seat pipe and said upper stay, said quadric link means further comprising a foldable link means extending between said first and said third pivotal means, said foldable link means having a first position which maintains said quadric link means in an uncollapsed condition and a second position in which said quadric link means is in a collapsed condition, said triangular base frame means being maintained in said triangular configuration for both the first and second conditions of said quadric link means, said foldable link means comprises first and second link members pivotally connected to one another by a pivot





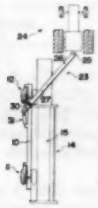
connection, said foldable link means further comprising an operable means for maintaining said quadric link means in said uncollapsed condition, said operable means being operable to maintain said first and second link members generally in a co-extensive position such that the axes of said first and second link members are generally aligned, whereby said quadric link means is prevented from moving from said first to said second condition, said operable means being manually operable to permit said quadric link means to be collapsed and folded to said collapsed condition, said operable means further comprising a support collar movably mounted on said first and second link members, said collar having a first position extending about said pivot connection between said first and second link members to prevent relative pivotal movement between said first and second link members, and a second position spaced from said pivot connection to permit relative pivotal movement between said first and second link members, and, a remotely operated element operably connected to said collar for moving said collar from said one position to said second position.

4,460,193

PULL TYPE SWATHER ASSEMBLY AND MOUNTING THEREFOR

Frank J. Dietz, and Reuben G. Bahnman, both of Loreburn, Canada, assignors to Autotran Swather Limited, Loreburn, Canada

Filed Jun. 1, 1982, Ser. No. 383,485
Claims priority, application Canada, Nov. 5, 1981, 389519
Int. Cl.³ B62D 53/00
U.S. Cl. 280—415 R 12 Claims



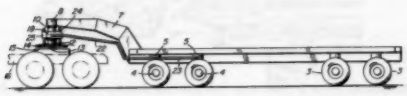
1. A mounting assembly for a pull type swather comprising in combination an elongate main mounting beam, two wheel assemblies each separately mounted beneath the beam adjacent a respective end thereof for pivotal movement around a respective vertical axis, from a field position in which the wheel assemblies lie at right angles to the beam for movement of the beam transverse to its length to a transport position in which the wheel assemblies lie substantially parallel to the beam for movement of the beam along its length and vice versa, in both of which positions both wheel assemblies lie effectively beneath said beam, field working components mounted on the beam and extending along one side thereof, a hitch pole assembly pivotally secured by adjacent one end thereof to said main mounting beam adjacent one end of said main mounting beam, and means to move said hitch pole assembly relative to said main mounting beam from a field position to a transport position and vice versa, in both of which positions said hitch pole assembly extends from said beam to a position on the side of said components opposite said beam to provide with said two wheel assemblies complete support for said components.

4,460,194

TOWED VEHICLE WITH MEANS FOR CONNECTION TO FIFTH WHEEL OF A TOWING VEHICLE

James R. McGhie, Brampton, and Semyon I. Fishgal, Toronto, both of Canada, assignors to American Hoist of Canada Limited, Brampton, Canada

Filed May 17, 1982, Ser. No. 378,610
Int. Cl.³ B62D 7/14
U.S. Cl. 280—443 6 Claims



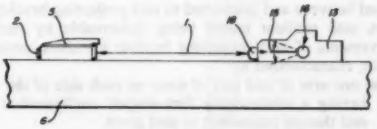
1. A towed vehicle comprising a frame, front and rear ground engaging wheel assemblies each spring mounted on said frame and located in such a manner that the center of gravity of said vehicle is situated between said front and rear wheel assemblies, whereby the wheel assemblies support the entire load carried by the vehicle, a gooseneck secured to said frame and projecting forwardly therefrom terminating in a free outer end, a fluid pressure cylinder mounted on said gooseneck adjacent the free outer end thereof and having a plunger reciprocally mounted therein, said plunger projecting downwardly from said gooseneck and having a plate with a king pin secured thereto for coupling with the saddle of a conventional fifth wheel of a tractor towing vehicle, said cylinder and plunger acting in conjunction with a compressible medium to cushion loads between said gooseneck and the towing vehicle means, preventing relative movement of said plate and the saddle of the fifth wheel on the towing vehicle, a collar rotatably mounted on said cylinder, said plunger being rotatable relative to said cylinder about the axis of rotation of the collar and means interconnecting said collar and plunger causing the same to rotate in unison while at the same time permitting reciprocal movement of the plunger.

4,460,195

AUTOMATIC CLAMPING AND RELEASE MECHANISM

Carolyn Bildner, Am Anger 18, 8221 Seebruck-Arlaching, Fed. Rep. of Germany

Filed Jan. 12, 1981, Ser. No. 224,136
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1980, 3002236; Aug. 18, 1980, 3031162
Int. Cl.³ A63C 9/08
U.S. Cl. 280—612 13 Claims



1. An automatic clamping and release mechanism for clamping an object to a supporting means at a predetermined clamping pressure and which automatically releases said object when a given clamping pressure is exceeded by a predetermined value comprising:

a first clamping means and an oppositely disposed second clamping means, said first clamping means being adapted to be fixed at a desired location to said supporting means relative to said second clamping means by means of a set-screw;

said second clamping means comprising a housing having a portion facing said first clamping means and having a cylindrical core therethrough, a telescopic spring-loaded piston pin movable between locking and release positions and of a diameter almost the same as said cylindrical core, said piston pin having a tip which passes through said cylindrical core to engage said object to be clamped, pressure sensor means arranged on said housing to indicate the actual pressure applied to said object to be clamped, said pressure sensor means disposed in a first portion of said housing in proximity with said tip of said piston pin which detect the pressure on said second clamping means and produces an electrical signal indicative thereof, and an electromagnetically operable mechanical locking means disposed in proximity to said piston pin in a second portion of said housing;

a circuit means, connected to said pressure sensing means to process the electrical signal and, which actuates said electromagnetically operable locking means to move said piston pin between said locking position to said release postion when said predetermined pressure acts on said pressure sensor means.

4,460,196

SUSPENSION SYSTEM FOR COUPLED VEHICLE AXLES

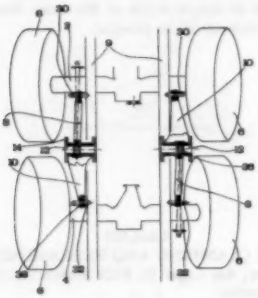
Roberto Perlini, 37047 S. Bonifacio, Corso Venezia 93, Italy

Filed Sep. 13, 1982, Ser. No. 417,539

Claims priority, application Italy, Dec. 23, 1981, 68672 A/81

Int. Cl.³ B60G 5/00

U.S. Cl. 280—676 **10 Claims**



1. An articulated suspension system for coupled vehicle axles having a pair of rigid arms on each side of the vehicle, one end of each of said arms being connected pivotally to a single transverse pivot on the vehicle and the other end of said arms being connected to one of said axles, a projecting bracket member formed on each of said arms and resilient means interposed between and connected to said projecting bracket members, said resilient means being deformable by oscillatory movements of said projecting bracket members around said pivot, characterized by

(a) one arm of said pair of arms on each side of the vehicle having a substantially fork-shaped configuration at the end thereof connected to said pivot,

(b) each said fork-shaped arm being oscillatory about the pivot and being non-movable transversely relative to the vehicle to thereby resist transverse thrust on the vehicle,

(c) the other arm of said pair of arms on each side of the vehicle having a substantially rod-shaped configuration and

(d) articulation means connecting each said rod-shaped arm to said pivot and to one of said axles to render each said rod-shaped arm oscillatory about the pivot and transversely relative to the vehicle,

(e) whereby said articulated suspension system is operative to maintain wheels on the vehicle in contact with uneven ground without change in distribution of load on the axles.

4,460,197

FRONT END STEERING ASSEMBLY FOR CARTS AND THE LIKE

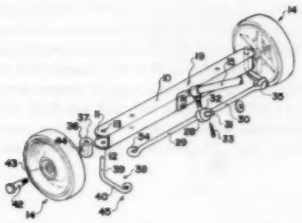
Garry W. C. Rogers, 402 Kirkfield St., Winnipeg, Manitoba, Canada R3K 1E6

Filed Feb. 3, 1982, Ser. No. 345,427

Int. Cl.³ B62D 1/00

U.S. Cl. 280—771 **25 Claims**

1. A front end steering assembly for carts and the like comprising in combination a transverse cross member, a ground engaging wheel mounted upon each end of said cross member, means to mount said wheels to said cross member, a steering arm operatively connected to each wheel and extending rearwardly of said cross member, a connecting rod extending from each steering arm towards the center of said cross member, a steering shaft, means mounting said steering shaft for axial rotation substantially centrally upon said cross member, said shaft extending upwardly and rearwardly from said cross member at an inclined angle relative to the central vertical axis of said cross member, a pitman arm connected to said steering shaft and extending downwardly therefrom normal to the axis thereof, means operatively connecting said connecting rods to said steering arms, and further means operatively connecting one connecting rod to the pitman arm and the other connecting rod to said one connecting rod, said means mounting said steering shaft upon said cross member including a steering shaft guide bracket secured substantially centrally of said cross member, said bracket including a cylindrical stem extending therefrom, an arcuate slot formed circumferentially in the wall of said stem and spaced downwardly from the distal end



thereof, the lower end of said steering shaft being hollow and socketed over said distal end of said cylindrical stem for axial rotation thereon and a securing bolt screw threadably engaging through the wall of said hollow end and engaging within said arcuate slot thereby preventing displacement of said steering shaft from said stem, limiting the downward engagement of said steering column with said stem and limiting the degree of axial rotation of said steering shaft in either direction, said pitman arm forming part of and extending from said securing bolt.

4,460,198

PASSIVE SEATBELT SYSTEM

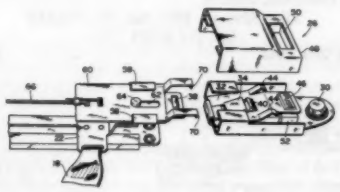
Naoshi Sasase, Aichi; Nobukatsu Inagaki, Nagoya; Yoshihiro Hayashi, Kasugai, and Yuji Nishimura, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai-Tika-Denki-Seisakusho, of Japan

Filed Aug. 29, 1979, Ser. No. 70,906

Claims priority, application Japan, Aug. 31, 1978, 53-120012[U]

Int. Cl.³ B60R 21/10

U.S. Cl. 280—804 **1 Claim**



1. A passive seatbelt system, wherein drive means is provided which can move an outer end portion of a webbing for restraining an occupant along a roof side of a vehicle in the longitudinal direction of the vehicle so as to automatically fasten the webbing to or unfasten same from the occupant, comprising:

(a) a tongue plate engaged with the outer end portion of said webbing;

(b) a buckle device secured to the rear portion of the roof side for engaging said tongue plate, and

(c) a release plate coupled to said drive means for movement in forward and rearward longitudinal directions of the

vehicle and for releasing the engagement of the tongue plate from said buckle device when the release plate moves forward in the vehicle, said release plate being secured to the tongue plate in a manner to be movable a certain distance in the longitudinal direction of the vehicle whereby the tongue plate is automatically engaged to or disengaged from the buckle device by a driving force of said drive means;

wherein a rotatable locking plate for engaging the tongue plate is provided on said buckle device, said locking plate is manually rotatable to release the engagement of the tongue plate, and the rotation causes a switch to actuate said drive means, whereby the tongue plate is moved forward in the vehicle.

4,460,199

MICROCAPSULE COATED SHEET FOR PRESSURE SENSITIVE COPYING PAPER

Noriyuki Hosoi; Hiroharu Matsukawa, and Yasuhiro Ogata, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 1, 1982, Ser. No. 384,120
Claims priority, application Japan, May 29, 1981, 56-82161
Int. Cl.³ B41M *5/22*
U.S. Cl. 346—207 **8 Claims**

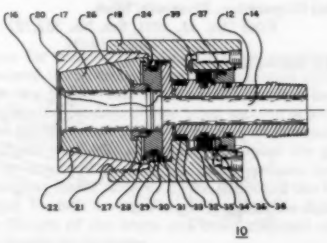
1. A microcapsule coated sheet for pressure sensitive copying paper, comprising a support having provided thereon, in sequence, a first coating layer comprising (1) microcapsules retaining an oil containing an electron donating color former dissolved or dispersed therein and (2) a protective agent, wherein the protective agent is larger than said microcapsules and comprises inorganic or organic solid fine particles which do not substantially form color when in contact with said electron donating color former, and a second coating layer consisting essentially of an adhesive.

4,460,200

HYDRAULIC CHUCK WITH IMPROVED SEAL

Robert F. Rasmussen, Minneapolis; George R. Smida, Crystal; Robert L. Wietecha, Columbia Heights, and Gary L. Pearson, Minneapolis, all of Minn., assignors to Air-Mo Hydraulics, Inc., Minneapolis, Minn.

Filed Jun. 25, 1981, Ser. No. 277,205
Int. Cl.³ F16L *21/06*
U.S. Cl. 285—18 **2 Claims**



1. A hydraulic chuck device for use with a tube, comprising:

piston means having an axially centered fluid passage and a tube seating means on one end thereof;

collet means mounted on said piston means, such that axial movement of said piston means operates said collet means;

chuck body means slideably mounted on said piston means and having nose cone means fixedly mounted on said body means, said nose cone means including a collet engaging surface positioned to close said collets upon engagement of said surface and said collet means; and

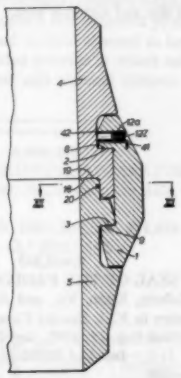
seal means for preventing passage of fluid between said tube and said collet means, including a seal cartridge means adjacent said tube seating means on said piston means, seal seat means slideably contacting said cartridge means and keyed to said collet means to define a seal cavity opening toward said tube and located between said seat and said cartridge and having a first size when said collets are open and a smaller second size when said collets are closed, and o-ring seal means having an uncompressed inner diameter greater than the diameter of said tube whereby said o-ring is out of contact with said tube when said cavity is in said first size.

4,460,201

PIPE CONNECTORS

John D. McGugan, Aberdeen, Scotland, assignor to Hunting Oilfield Services (UK) Limited, Aberdeen, Scotland

Continuation of Ser. No. 233,575, Feb. 11, 1981, abandoned. This application Dec. 13, 1983, Ser. No. 560,278
Claims priority, application United Kingdom, Feb. 18, 1980, 8005419; Jul. 8, 1980, 8022337
Int. Cl.³ F16L *21/06*
U.S. Cl. 285—18 **25 Claims**



1. A pipe connector for connecting the abutted end portions of two pipes each having an axis and each of which is provided with an outwardly extending surface directed away from the respective axis and pipe end and directed transverse to each said axis of said two pipes, said pipe connector comprising a split annular ring having an axis and a single split formed therein for surrounding said abutted pipe end portions substantially completely and defining a pair of inwardly extending surfaces directed transverse to said axis of said ring and towards each other and each engageable with a respective said surface on said pipe end portions, one of said surfaces of said ring having a greater inward radial extent than the other said surface such that in use said ring is permanently engaged with said corresponding one of said pipe end portions, said ring further comprising a relaxed condition wherein said ring is engageable with both of said pipe end portions, and operating means for causing the radial dimensions of said ring to increase to permit disengagement of said ring from said other pipe end portion.

4,460,202

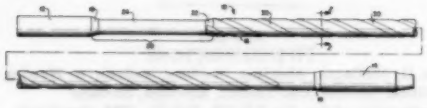
INTERMEDIATE WEIGHT DRILL STRING MEMBER

Glenn G. Chance, 5206 Cheena, Houston, Tex. 77096, and William Kovensky, 5078 Whetstone Rd., Columbia, Md. 21044

Filed Nov. 26, 1980, Ser. No. 210,479
Int. Cl.³ F16L *25/00*
U.S. Cl. 285—333 **10 Claims**

1. A drill string member to be interposed in a drill string between the collars at the bit end and the drill pipe at the upper end, said drill string member having a weight per unit length less than that of the collars and more than that of the drill pipe

in said string thereby forming an intermediate weight member, said intermediate weight member including tool joint means at each end, said member having a slip and elevator area at one end of its body portion adjacent the tool joint means at said one end, the remaining main portion of said body between said slip and elevator area and said tool joint being formed with at least



one spiral groove, said slip and elevator area having a diameter less than that of the spiral main body portion said tool joint means, and the depth and number of said at least one spiral groove being such that the bending moment of inertia through said spiral area is substantially equal to the bending moment of inertia in said slip and elevator area.

4,460,203

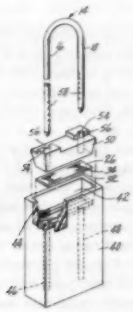
SEAL OF THE PADLOCK TYPE

Sigurd M. Moberg, Etlan, Va., and Allan W. Swift, Denville, N.J., assignors to E. J. Brooks Company, Newark, N.J.

Filed Sep. 21, 1981, Ser. No. 303,896

Int. Cl.³ B65D *33/34*

U.S. Cl. 292—318 **5 Claims**



1. A seal of the padlock type comprising a seal body having a pair of spaced openings to receive legs of a shackle, and a fastener in said body having apertures aligned with a body opening, said fastener apertures being formed by a pair of spring tongues so dimensioned that an inserted shackle leg is gripped between the ends thereof to prevent retraction, one of said ahackle legs being longer that the other and being engaged in one of said fastener apertures and being rotatable therein, the other shackle leg being shorter with the end thereof terminating at the top of the body and being positionable into alignment with the other fastener aperture by rotation of the shackle about the axis of the longer shackle leg, the end of said other leg being removably retained at the top of the seal body in alignment with the other seal aperture.

4,460,204

DOOR HANDLE ASSEMBLY HAVING A MECHANISM FOR PREVENTING INADVERTENT LOOSENING OF THE HANDLE

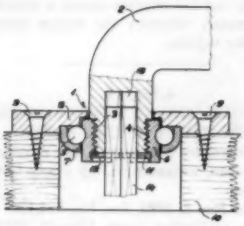
Per Olsen, Bagsvaerd, Denmark, assignor to Carl F. Petersen I/S, Valby, Denmark

Filed Jun. 18, 1982, Ser. No. 389,983

Claims priority, application Denmark, Jun. 26, 1981, 2842/81

Int. Cl.³ E05B *3/06*

U.S. Cl. 292—356 **3 Claims**



1. A door handle assembly for use on one side of a door also having a door handle on the other side of the door, in which the assembly includes a door handle pivoted in a mounting plate, such as a door handle rosette, through a ball bearing, the outer race of the ball bearing being fixed to the mounting plate and an inner race of the ball bearing being threadably secured to the door handle, an inner end of the door handle bearing an external thread and having a cavity opening toward the other door handle for receiving a door handle pin therebetween, the door handle pin being nonrotatively secured to the door handle, the ball bearing and the outer race surrounding the inner race in circumferential arrangement, characterized in that the inner race of the ball bearing has an internal thread corresponding to the external thread of the door handle for securing the inner race to the door handle and wherein the assembly includes means for preventing rotation of said inner race with respect to the door handle pin, the door handle pin being slidable in said means.

4,460,205

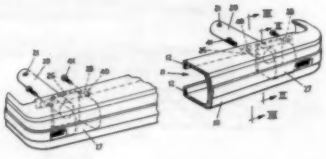
ENERGY ABSORBING VEHICLE BUMPER ASSEMBLY

Patrick M. Glance, Plymouth, Mich., assignor to Concept Anaylsis Corporation, Plymouth, Mich.

Filed Dec. 21, 1981, Ser. No. 332,752

Int. Cl.³ B60R *19/06*

U.S. Cl. 293—120 **11 Claims**



1. An energy absorbing vehicle bumper assembly comprising:

at least two rigid mounting members;

a rigid plate having upper and lower edges attached to the distal ends of each of said mounting members perpendicular thereto;

resilient energy absorbing means attached to the face of each of said plates; and

a bumper beam comprising a rearwardly facing hollow channel member having a front portion and upper and lower portions extending rearwardly therefrom, rear edges of the upper and lower portions including down-

wardly and upwardly extending lip portions, respectively, that fit behind the plates and serve as a backing therefor such that the plates abut and are restrained against rearward movement by the lips when the bumper assembly is in its non-impact position, the lips terminating at a point spaced at least slightly away from the rigid mounting members so as to permit at least limited impact rotation of the bumper beam about the longitudinal axis of the bumper beam, the resilient energy absorbing means extending from each plate into contact with the front portion of the bumper and substantially filling the interior of the bumper beam at the point adjacent the plates, the upper and lower portions of the bumper beam conforming generally to the shape of the upper and lower edges of the plates and being positioned adjacent to the upper and lower edges of the plates such that they permit the plates to slide substantially freely in a forward direction but are held by the plates in a substantially fixed vertical position, the bumper beam also permitting rotational movement of the bumper beam with respect to the plates about the longitudinal axis of the bumper beam and the vertical axis upon impact, such that the bending moment on the plates and rigid mounting members is reduced.

4,460,206

BUMPER FOR VEHICLES, PARTICULARLY MOTOR VEHICLES

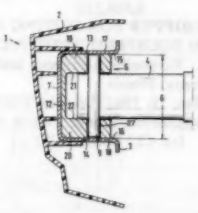
Dietmar Peter, Hemmingen, Fed. Rep. of Germany, assignor to Dr. Ing. H.C.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 20, 1981, Ser. No. 313,328

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040502

Int. Cl.³ B60R *19/02*

U.S. Cl. 293—132 **8 Claims**



1. A bumper for vehicles comprising, a beam and dampers which are secured to the beam by means of retention devices; said beam having flanges and said retention devices having guide sections; each retention device being secured at a vertical section of the beam and being connected to a respective damper by means of a bolt occupying a bore in the guide sections of the retention device, the guide sections having surfaces contacting inside surfaces of the flanges of the beam and the damper, the bolt having a height less than the distance between the flanges of the beam and being disposed solely between the flanges of the beam.

4,460,207

DEVICE FOR THE CARRYING OF SKIS

Jakob Gies, Solmser Strasse 14, Niederaula/Mengshauser D 6434, Fed. Rep. of Germany

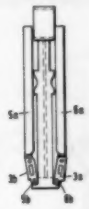
Filed Oct. 23, 1981, Ser. No. 314,372

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041895

Int. Cl.³ A45C *71/00*

U.S. Cl. 294—147 **9 Claims**

1. A device for carrying skis comprising: a T-shaped frame member including a vertical element and a horizontal element, said horizontal element including first and second intermediate members, each having one end pivotably connected to one end of the vertical element and a second end, first and second pressing flaps pivotably connected to the second ends of said intermediate members, and shackle means for engaging said pressing flaps when they are in an orientation parallel to said



vertical element, said intermediate members being pivotable on said vertical element between a first extended position substantially perpendicular to said vertical element in horizontal disposition and a second folded position in which said intermediate elements are adjacent said vertical element and extend substantially vertically.

4,460,208

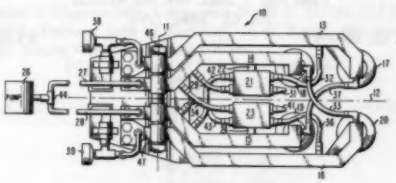
VACUUM GRIPPING APPARATUS

Barry L. Hoffman, Stevens, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 23, 1982, Ser. No. 371,478

Int. Cl.³ B66C *1/02*

U.S. Cl. 294—65 **5 Claims**



1. A vacuum gripping apparatus for lifting objects having curved surfaces comprising:

a flex axis;

a plurality of arms extending from one side of said flex axis in substantially the same plane, said plane being substantially parallel to said flex axis, a major portion of each of said arms being substantially perpendicular to said flex axis;

a plurality of vacuum holding members individually supported at the free ends of said arms whereby said arms individually flex out of said plane and individually bring said holding members into contact with said curved surface and said holding members grasp said surface for all curvatures of said surface.

4,460,209

FIXTURE FOR REMOVING A TURBINE DISC WITHOUT REMOVING BLADES THEREFROM

Jack N. Lyerly, Belmont, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 3, 1981, Ser. No. 327,158

Int. Cl.³ B66C *1/30*

U.S. Cl. 294—67 BC **8 Claims**

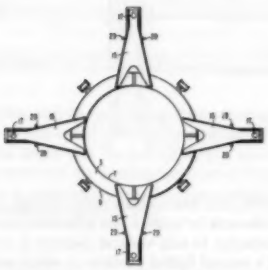
1. A fixture for lifting turbine discs without removing blades therefrom, said fixture comprising:

a base with a centrally disposed opening;

a plurality of arms affixed to and extending generally radially from said base;

said arms having an upper portion and a lower portion;

said lower portion being pivotally connected to said upper portion in such a manner that said lower portion always remains generally parallel to said base as it pivots and that



said lower portion pivots back under said upper arm portion to support said disc;

said lower arm portion having a telescoping member on its distal end; and

said telescoping member having a pad for supporting said disc inboard of said blades.

4,460,210

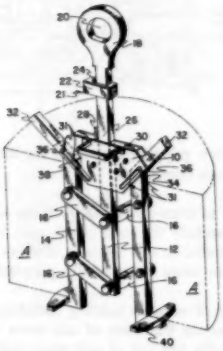
LIFTING DEVICE

Joseph W. Miechur, R.D. #1 Box 91, Slatington, Pa. 18080

Filed Sep. 7, 1982, Ser. No. 415,528

Int. Cl.³ B66C *1/44*

U.S. Cl. 294—97 **9 Claims**



1. A lifting device intended to lift objects with an annular opening by grasping the object at the interior surface of the annulus comprising:

(a) a housing including an opening therethrough to slidably receive a shank of a handle;

(b) a handle having a graspable terminus at its distal end, said handle including a shank sized to slidably pass through said housing;

(c) a pair of legs located on opposing sides and parallel to said handle's shank, said legs upper terminus being movably connected to said housing via a guide mechanism so that longitudinal reciprocating movement of said handle through said housing causes transverse reciprocating movement of said legs to frictionally engage or disengage the annular interior surfaces along the entire length of said legs in linear juxtaposition to said interior surface, of the object to be lifted;

(d) a plurality of pairs of links, each pair pivotably mounted at its one end on opposing sides of said handle's shank below said shank's exit point from said housing and at its other end of to one of said legs; and,

(e) a locking mechanism associated with said handle to prevent longitudinal movement of said handle's shank.

4,460,211

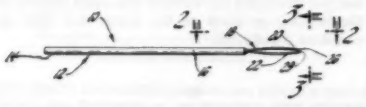
GEM HOLDER

William B. Pomeroy, 3846 Park La., Traverse City, Mich. 49684, assignor to William B. Pomeroy and Johana Pomeroy, both of Traverse City, Mich.

Filed Sep. 27, 1982, Ser. No. 424,880

Int. Cl.³ B25B *7/02*

U.S. Cl. 294—99 R **8 Claims**



1. Apparatus for holding a gem comprising, in combination, a handle and an array of gem holding wires, said handle having a support end and a gem holding end, said array of gem holding wires being secured to said handle gem holding end and including at least four substantially parallel wire sections which are each attached to said handle and between which said gem may be inserted so as to facilitate holding and examining said gem.

4,460,212

PINCERS-TYPE GRIPPER FOR SEIZING OBJECTS AND GRIPPING HEAD EQUIPPED WITH SUCH GRIPPERS

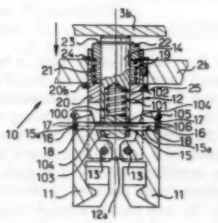
Daniel Montferme, Vernouillet, France, assignor to E. P. REMY et Cie, Dreux, France

Filed Jan. 19, 1982, Ser. No. 340,872

Claims priority, application France, Oct. 8, 1981, 81 18955

Int. Cl.³ B25J *15/00*

U.S. Cl. 294—115 **3 Claims**



1. A gripper for seizing elongate objects such as bottles, the gripper comprising:

support means having an operating axis;

a set of jaws hingedly mounted on said support means, each jaw being rotatable between an open position and a shut position about a respective pivot axis spaced from and lying in a plane perpendicular to said operating axis;

an operating rod slidably disposed in said support means coaxial with said operating axis, said operating rod having a first end portion extending between said jaws and a second end portion;

a block slidably connected to said operating rod for limited axial movement with respect to the operating rod;

an actuating member fixed to the block and extending trans-

versely to said rod, each of said jaws having an aperture loosely receiving said actuating member, the actuating member having two lateral contact surfaces parallel to each other, and the aperture of each jaw having a planar opening cam surface and an opposed planar closing cam surface, said cam surfaces being nonparallel and extending at an angle such that said opening cam surface is parallel to the contact surfaces of the actuating member when the jaws are in the open position and said closing cam surface is parallel to the contact surfaces of the actuating member when the jaws are in the shut position;

means for slidably moving the operating rod with respect to the support means between a first position in which one of the lateral contact surfaces of the actuating member bears against the opening cam surface of each jaw to a second position in which the other of the lateral contact surfaces bears against the opposed closing cam surface; and

a spring internally disposed in said operating rod for resiliently urging the block and actuating member relative to the operating rod toward the closing cam surface of each jaw to assure positive closing of said jaws when the operating rod is in said second position with respect to the support means despite wear of and play between the parts of the gripper.

4,460,213

MOTOR VEHICLE FRONT END WITH AN ADJUSTABLE AIRFLOW DEVICE

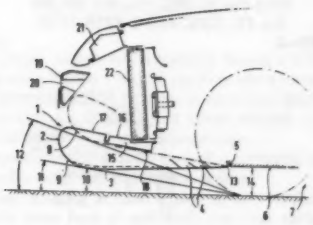
Lutz J. Janssen, Munich, and Helmuth Schrader, Cologne, both of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 17, 1982, Ser. No. 408,952

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132341

Int. Cl.³ B62D *37/02*

U.S. Cl. 296—1 S **3 Claims**



1. A motor car front end with an adjustable air-conducting means in the form of a nose apron which is arranged beneath the bumper and which may be tilted downwards about a transverse axis as a function of the velocity of travel, characterized in that the nose apron **(1)** has a well rounded front edge **(2)** and has an adjacent area tapering therefrom toward the transverse axis, this area being provided with reinforcing corrugations **(3)** and cooling air outlet ports **(4)**.

4,460,214

VEHICLE SIDE EXTENSION

Abe B. Kuhns, Arthur, Ill., assignor to E-Z Trail, Inc., Arthur, Ill.

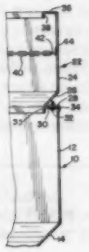
Filed Mar. 3, 1982, Ser. No. 354,451

Int. Cl.³ B62D *33/00*

U.S. Cl. 296—33 **24 Claims**

1. A side extension for increasing the volumetric capacity of a vehicle cargo containing body, said extension including an elongate wall having upper and lower longitudinal edges and inner and outer sides and flange means extending along the lower longitudinal edge thereof for mounting the wall on the cargo containing body, whereby the improvement in said extension comprises:

said flange means including a first longitudinally extending flange, one longitudinal edge of said first flange being affixed to said wall adjacent said lower longitudinal edge of said wall and said first flange extending at an inclined angle inwardly and downwardly from the inner side of



said wall, the height of said wall being substantially greater than the height of said first flange, and a second flange having an edge affixed to said first flange adjacent the other longitudinal edge of said first flange and extending angularly from said first flange toward the outer side of said wall, and

fastening means for affixing said second flange to the cargo containing body.

4,460,215

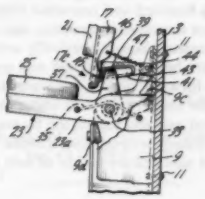
FOLDING SEAT ASSEMBLY

Michael J. Chamberlain, Lynnwood; David R. Myers, and Donald R. Furlong, both of Kirkland, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1981, Ser. No. 307,176

Int. Cl.³ B60N *1/10*

U.S. Cl. 297—14 **4 Claims**



1. A folding seat assembly for mounting on a wall, comprising:

seat support bracket means adapted to be mounted on a wall;

seat pan frame having front and rear extents;

seat back frame having upper and lower extents;

a first pivot means connecting said seat pan frame adjacent its rear extent to said support bracket means for limited articulation of said seat pan between a generally horizontal seating position and a generally vertical stowed position when said bracket means are mounted on a wall;

a second pivot means connecting said seat back frame, adjacent its upper extent, to said support bracket means for limited swinging movement of the lower extent of said seat back frame between a seating position and a stowed position when said support bracket means are mounted on a wall;

a seat back actuating cam having an elongated body slotted lengthwise and being pivotally connected at one of its ends to said support bracket means adjacent the lower

extent of said seat back frame for limited rotation between a generally vertical, out-of-the-way position and a generally horizontal load reacting position in which a second end of said cam body contacts and displaces said seat back frame to its seating position;

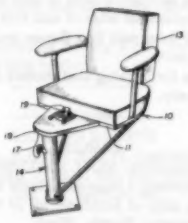
a cam actuating crank arm affixed to said seat pan frame so as to rotate therewith, said crank arm cooperating with the slot in said cam body so as to effect said rotation of said cam between its generally vertical and horizontal positions when said seat pan frame is articulated from its stowed position to its seating position, said crank arm and slotted cam body arranged and cooperating with said seat back and seat pan frames so that rearwardly directed loads on said seat back frame adjacent the lower extent thereof are reacted by said cam, in compression, against said support means without applying a rotative force to said crank arm.

4,460,216

DEEP-SEA FISHERMAN'S CHAIR

Rogenald J. Keller, 204 N. Minnesota Ave., St. Peter, Minn. 56082

Filed Nov. 5, 1981, Ser. No. 318,334
Int. Cl.³ A47C *3/18, 7/62;* B63B *29/00*
U.S. Cl. 297—217 **7 Claims**



1. A deep-sea fisherman's chair comprising:

(a) seat structure for supporting a fisherman while fishing and having a forward and rearward side;

(b) upright pivot structure supporting said seat structure for pivotal movement about a vertically extending axis, said pivot structure being constructed and arranged such that said pivot is forward of said rearward side; and

(c) a fishing-pole socket pivotable about at least one generally horizontal axis and supported by said pivot structure at a point located between said pivotal axis of said seat structure and said rearward side of said seat structure.

4,460,217

POSITION MEMORY FOR AUTOMATICALLY ADJUSTABLE SEAT ASSEMBLIES

Hiroshi Tsuda, and Hideoki Matsuoka, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 946,166, Sep. 27, 1978, Pat. No. 4,283,036. This application May 13, 1981, Ser. No. 263,167
Claims priority, application Japan, Oct. 12, 1977, 52-137101
Int. Cl.³ A47C *1/00;* B60N *1/02*
U.S. Cl. 297—361 **4 Claims**

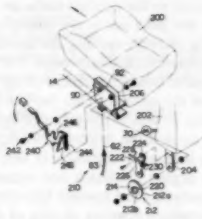
1. A position memory for a seat assembly which includes a seat having a bracket member movable therewith, a seatback having a brace hingedly connected to said bracket member so that said seatback is tiltable with respect to said seat, and drive means for driving said seatback for swinging movement thereof relative to said seat, said position memory comprising:

a rotary wheel member freely rotatably mounted on said brace and having a recess formed at the periphery thereof;

a pivotal member fastened to said brace and frictionally engageable with said wheel member for rotation of the rotary wheel member together with the tilting movement of said seatback;

means for pivoting said pivotal member for releasing the same from the frictional engagement with the rotary wheel member;

means for providing said rotary wheel member with an angular rest position under a condition wherein said pivotal member is released from said rotary wheel member; and



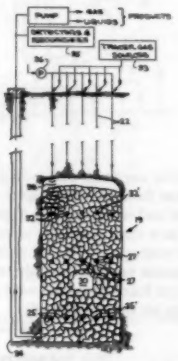
a toggle switch mounted on said bracket member and having an operation lever in constant engagement with the periphery of said rotary wheel member, said operation lever being engaged with said recess of said wheel member when said wheel member assumes said angular rest postion, thereby to change an ON condition of the switch to an OFF condition and vice versa.

4,460,218

CHARACTERIZATION OF IN SITU OIL SHALE RETORTS PRIOR TO IGNITION

Thomas F. Turner, and Dennis F. Moore, both of Laramie, Wyo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 4, 1982, Ser. No. 385,206
Int. Cl.³ E21C *41/10;* E21B *47/10*
U.S. Cl. 299—1 **17 Claims**



1. A method for characterizing an in situ oil shale retort prior to ignition of the retort, wherein said retort is formed by mining a void having a floor in an oil shale deposit, and then sequentially blasting a plurality of layers of rock rubble into said void, each of said layers having an upper level, a roof being formed in said retort by the last sequence of the blasting, said retort being provided with a plurality of access holes from the surface of the earth to said roof, and an outlet at the floor of said retort, including the steps of:

emplacing a plurality of units containing tracer gas at the upper level of each layer of rubble prior to blasting to

form the next layer, each of said units including electromagnetic (EM) signal receiving means that is responsive to a coded EM signal to release said tracer gas into the rubble;

transmitting coded EM signals to said receiving means to selectively release gas from said units;

forcing said released gas to flow to said outlet; and

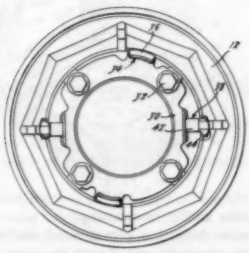
monitoring the time of arrival of said released gas at said outlet for characterization of said retort.

4,460,219

WHEEL COVER RETAINER ASSEMBLY

Thomas E. Sepanik, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 429,585
Int. Cl.³ B60B 7/06
U.S. Cl. 301—108 R **4 Claims**



1. In a motor vehicle wheel member having a hollow annular hub portion having a central aperture and a cover member engageable with the hub portion to close the aperture, a retainer assembly for securing said cover member to said hub portion, the retainer assembly comprising:

A. means defining a radially inwardly extending wall proximate the outer end of said hub portion;

B. means defining at least a pair of cam surfaces on the axially inner face of said wall, said cam surfaces being arranged on diametrically opposite sides of said aperture and each defining a ramp extending axially inwardly between an axially outer entry position and an axially inner locking position spaced circumferentially therefrom;

C. an axially extending entry slot formed through said wall at each entry position;

D. a locking notch formed in said wall inner face at each locking position; and

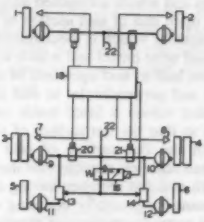
E. resiliently locking means fixedly carried with the cover member and having an annular plate portion for engagement with a complementary portion of said cover member, at least a pair of circumferentially spaced guide tab portions extending axially from said plate portion and guidingly circumferentially engaging a radially inner axially extending surface of said hub portion wall, and a locking portion having at least a pair of radially extending locking fingers supported in cantilever fashion from said plate portion at diametrically opposed positions and including resilient locking portions insertable through said entry slots and axially displaceable upon engagement with said ramps during rotation of said cover member in one direction to engage said notches in snap-fit relationship.

4,460,220

ANTI-SKID BRAKE CONTROL SYSTEM FOR A MULTI-AXLE VEHICLE

Erwin Petersen, Wunstorf, Fed. Rep. of Germany, assignor to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Apr. 27, 1982, Ser. No. 372,424
Int. Cl.³ B60T 8/02
U.S. Cl. 303—119 **6 Claims**



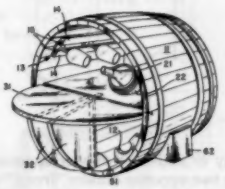
1. An anti-skid brake control system for a vehicle having a front axle and a pair of rear axles with a wheel on each end thereof comprising, a brake cylinder for each wheel of the vehicle, a sensor for providing output signals in accordance with the dynamic behavior of the front wheels and the rear wheels of one of the pair of rear axles, an evaluating circuit for providing control signals in accordance with the output signals of the sensors, a modulating control valve connected to the brake cylinders of the front wheels and of the rear wheels of one of the pair of rear axles, throttle valve means connected between the brake cylinders of one of the pair of rear axles and the brake cylinders of the other pair of rear axles, and controlling valve means connected to the throttle valve means for causing a reduction in the brake pressure to the brake cylinders of the other pair of rear axles during regulated braking operations and for causing the full brake pressure of the brake cylinders of the one pair of rear axles to be conveyed to the brake cylinders of the other pair of rear axles during unregulated braking operations.

4,460,221

WINE BAR

William Dimino, 12226 ½ Montana Ave., Los Angeles, Calif. 90049

Filed Aug. 24, 1981, Ser. No. 295,593
Int. Cl.³ E21B 46/00
U.S. Cl. 312—277 **1 Claim**



1. A wine bar for storing wine bottles and wine glasses comprising:

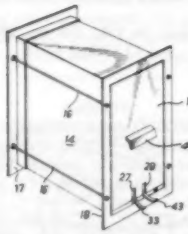
a. a section of a wine barrel having a closed end and an open end;

b. a plurality of rack forming elements each of which is disposed in the lower half of said section of said wine barrel and on which the wine bottles are stored;

c. a plurality of brackets each of which has a pair of flanges to which inwardly opening outwardly offset channels are connected in order to store the wine glasses thereon;

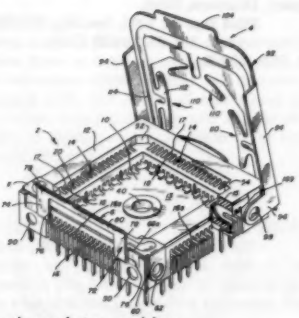
d. a cylindrical member which is formed out of an insulating material and which has a bottom;
e. a first semicircular member which is disposed adjacent to the top half of said open end of said section of said wine barrel and which is pivotally coupled by an axle to the side of said section of said wine barrel along its straight peripheral edge so that said first semicircular member either opens or closes the top half of said section of said wine barrel;
f. a second semicircular member which is divided into two half-portions and which is disposed adjacent to the bottom half of said open end of said section of said wine barrel;
g. a support member which is mechanically coupled to said section of said wine barrel and which is disposed adjacent to the bottom half of said open end of said section of said wine barrel and perpendicular to said axle;
h. a flat member which is fitted inside said section of said wine barrel so that the flat surface of said flat member is aligned with the flat surface of said first semicircular member when said first semicircular member is in its open position with said flat member having a hole;
i. coupling means for pivotally coupling said two half-portions of said second semicircular member to said support member so said two half-portions of said second semicircular member not only open and close the bottom half of said section of said wine barrel, but also support in conjunction with each other said first semicircular member in its open position; and
j. a mounting member which is disposed within said hole in said flat member and on which said cylindrical member is mounted wherein said support member is mechanically coupled to the bottom half of said section of said wine barrel and to said flat member by a bracket and wherein said coupling means is mechanically coupled to said support member in order to support said cylindrical member whereby one of the wine bottles may be placed in said cylindrical member.

4,460,222
DRAWER APPARATUS
Alfred E. R. Larking, 15 Lambton Rd., London, N.19, England
Filed Aug. 10, 1982, Ser. No. 406,912
Claims priority, application United Kingdom, Aug. 11, 1981, 8124492
Int. Cl.³ A47B *81/00*
U.S. Cl. 312—286 **15 Claims**



1. A security or anti-theft drawer apparatus comprising a drawer having two opposite drawer "fronts" and arranged for mounting in an aperture from which it may be selectively withdrawn in either of the two opposite directions faced by said drawer fronts, and locking means having an operative condition in which the locking means provide a non-resilient positive latching action to prevent withdrawal of the drawer in one direction from a closed position and an inoperative condition in which drawer withdrawal in said one direction is unimpeded by said locking means, said locking means being located predominantly within the drawer adjacent the one drawer front that is trailing when the drawer is opened in said one direction and including a control member co-operable with a defining surface of the aperture for automatically triggering the inoperative locking means upon opening the drawer in said one direction from a closed position such that upon reclosing the drawer the locking means adopts its operative condition to prevent a re-opening of the drawer in said one direction, characterised in that said control member projects from said one drawer front outwardly of the drawer such as to render the locking means manually settable to either its operative or inoperative condition whilst said drawer is closed.

4,460,223
COVER FOR CHIP CARRIER SOCKET
Vincent B. Brown, Prospect Heights, and Robert F. Schlacks, Mount Prospect, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.
Filed Dec. 30, 1981, Ser. No. 335,801
Int. Cl.³ H01R *23/72*
U.S. Cl. 339—14 R **17 Claims**



1. A chip carrier socket comprising:
receptacle means having a plurality of electrical contacts adapted to be interconnected with an electrical circuit;
said receptacle means forming a rectangular receptacle having an upper access opening for receiving a leadless chip carrier for connection with the electrical circuit;
said receptacle means further forming an upwardly facing surface within said receptacle for engaging a portion of the chip carrier element inserted therein;
said receptacle means further including means for creating an electrical connection between a portion of said plurality of electrical contacts and the active chip carrier in engagement with said surface;
cover means having four intersecting sides being pivotally mounted on said receptacle means for movement between an open position and a closed position over said upper opening to said receptacle;
bracket means mounted on said receptacle means for locking said cover means in said closed position and for releasing said cover means from said closed position;
said cover means having a plurality of resilient spring members to apply a force to the chip carrier in said closed position;
said plurality of spring members acting to apply a force at plurality of discrete points to press the chip carrier in positive contact with said receptacle surface in electrical contact with said portion of said electrical contacts;
said spring members are in the form of a plurality of resilient cantilevered arms;
said plurality of cantilevered arms curve downward into said receptacle from said cover means to apply a force to the chip carrier within the receptacle at their respective free ends;
said plurality of cantilevered arms are arranged as separate pairs of arms, a base projection being carried at an inter-

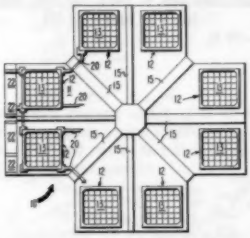
mediate portion of each of said four sides, each of said pairs being supported by a respective one of said base projections and being positioned symmetrically on said cover means with the free ends of said pair extending in opposite directions from said base projection to contact the chip carrier at discrete points and apply a force thereto about a common center.

4,460,224

FOLDABLE CIRCUIT ASSEMBLY

Herbert Stopper, Orchard Lake, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 21, 1982, Ser. No. 380,582
Int. Cl.³ H01R *23/68*
U.S. Cl. 339—17 F **1 Claim**



1. A foldable assembly for a plurality of integrated circuits comprising:

eight rigid support members shaped as quadrilaterals with two ninety degree internal angles, a forty-five degree internal angle and a one hundred thirty-five degree internal angle;

means for flexibly joining the support members in a substantially circular configuration along the sides of the quadrilateral defining the forty-five degree internal angle such that each support member is joined directly to two other support members;

means for attaching the plurality of integrated circuits to the support members;

means for electrically interconnecting the integrated circuits; and

means for providing electrical communication to the foldable assembly;

said support members being capable of being folded together such that the integrated circuits lie in substantially parallel planes.

4,460,225

THERMOCOUPLE WIRING HARNESS AND CONNECTOR SYSTEM

M. Samuel Moore, and Aramais Harootion, both of Northridge, Calif., assignors to Semco Instruments, Inc., No. Hollywood, Calif.

Filed Dec. 15, 1981, Ser. No. 330,832
Int. Cl.³ H01R *13/22*
U.S. Cl. 339—28 **18 Claims**

1. A thermocouple wiring harness and system including:

a junction box;

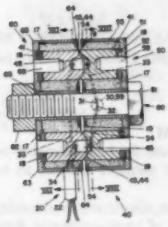
a plurality of two-wire corrosion-resistant cables extending from and electrically connected by said junction box;

a plurality of thermocouple probes having two elements for sensing temperature in multiple predetermined locations; and

a plurality of improved thermocouple connectors for connecting each of said thermocouple probes to a respective cable, each improved thermocouple connector comprising:

a replaceable probe portion attached to said thermocouple probe and including a housing, a pair of electrical conductors positioned at opposite ends of said housing and electrically insulated therefrom, each of said conductors being electrically connected to one element of said two elements of said thermocouple probe, each of said conductors being further provided with an externally exposed contact surface;

a fixed wiring harness portion attached to one of said cables and including a housing, a pair of electrical conductors positioned at opposite ends of said housing and electrically insulated therefrom, each of said conductors being electrically connected to a wire of said cable, each of said connectors being further provided with an externally exposed contact surface for electrically contacting said contact surface of an associated one of said conductors of said probe portion; and



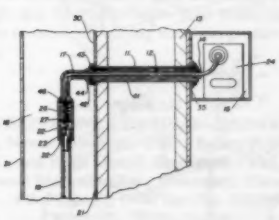
a fastener for releasably mounting and retaining said probe portion and said wiring harness portion in an engaged and mated condition such that the conductors of the probe portion are electrically connected to the associated conductors of the wiring harness portion, said fastener having a predetermined coefficient of thermal expansion less than the coefficient of thermal expansion of said connector probe and wiring harness portions such that the retaining force of said fastener increases in proportion to increases in the ambient temperature of the connector environment without causing plastic deformation of the conductors, said fastener being centrally positioned with respect to said conductors.

4,460,226

ELECTRICAL CONNECTOR FOR LUMINOUS DISPLAYS

Neil Hageman, Chico, Calif., assignor to Hage Connectors, Inc., Chico, Calif.

Continuation of Ser. No. 202,193, Oct. 30, 1980, abandoned.
This application Mar. 9, 1983, Ser. No. 473,579
Int. Cl.³ H01R *33/08*
U.S. Cl. 339—55 **4 Claims**



1. In combination with a building wall, a metal conduit therethrough terminated at and fastened to a letter housing at the outside of said wall and to a high voltage conductor housing at the inside of said wall and a high voltage pliable, wire-like, conductor extending between said housings;

a rigid dielectric conduit dimensioned for receipt by insertion therethrough of said high voltage conductor and for telescopic insertion into and removal from said metal conduit;

a right angularly related socket mounted at the normally outboard end of said dielectric conduit and being connected to said conductor, and dimensioned for receipt of an electrode bearing end of a gaseous discharge tube into electrical connection with said conductor; and

said dielectric conduit and socket and tube end being formed for assembly outside of said letter housing and for straight line telescopic insertion of said dielectric conduit into said metal conduit, said dielectric conduit and said metal conduit cofunctioning to position and support said tube in said letter housing substantially parallel to the center plane thereof.

4,460,227

SEALING GROMMET MEANS

David J. Ball, Pacific Palisades, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Jul. 17, 1981, Ser. No. 284,249
Int. Cl.³ H01R *13/56*
U.S. Cl. 339—94 M **12 Claims**

1. Grommet means for being slidably and sealingly received onto an elongated member subject to transverse movement, comprising:

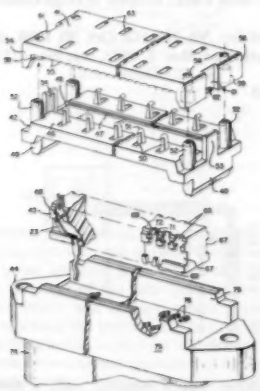
a body of flexible, elastic material having an aperture passing therethrough of cross-sectional dimensions greater than those of the member, walls defining said aperture forming a hollow tube extending along said aperture with a terminal opening of dimensions less than those of the member, said hollow tube being located within the aperture with no tube parts extending outwardly of said aperture, the tube wall defining the tube opening being flexedly movable transversely of the aperture into contact with the body defining the aperture without changing the tube opening dimensions.

4,460,228

PITCH CHANGE CONNECTOR

David Lane, Greensboro, and Ronald G. Sergeant, Winston-Salem, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 12, 1982, Ser. No. 433,930
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—99 R **10 Claims**



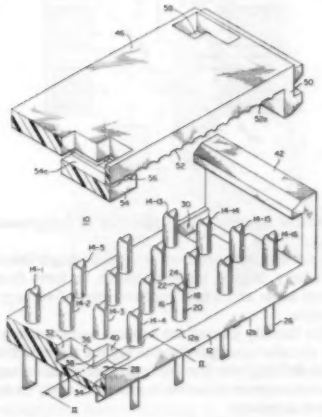
1. An electrical connector comprising an insulating housing having first and second faces, a series of terminals having been stamped from sheet metal stock as identical blanks and each comprising first and second contact portions integrally joined by a deformable strip-like body portion, the terminals being assembled with the housing with the first contact portions arranged at a first pitch at the first face, and the second contact portions arranged at a second pitch at the second face, the second pitch being different from the first pitch, the strip-like body portions having been deformed both longitudinally and laterally in their own planes to change the second contact portions from the first pitch to the second pitch.

4,460,229

FLAT CABLE CONNECTOR HAVING COVER-CABLE RETENTION

Russell H. Matthews, Chino, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Continuation of Ser. No. 250,049, Apr. 1, 1981, abandoned. This application Jun. 9, 1983, Ser. No. 502,822
Int. Cl.³ H01R *11/20*
U.S. Cl. 339—99 R **10 Claims**



1. An electrical connector for terminating flat multiconductor cable, said connector comprising an elongate base, a plurality of insulation-piercing contacts fixedly supported by said base in predetermined pattern and extending outwardly thereof, and a cover supported by said base and defining a first surface extending longitudinally with said base to therewith effect movement of said cable into insulation-pierced electrical connection with said contacts, said cover further defining a second surface extending partially longitudinally with said cover first surface and spaced therefrom to provide therewith a passage for receipt and support of said cable in position adjacent said cover first surface, said cover second surface being in non-interfering disposition with respect to said contact pattern.

4,460,230

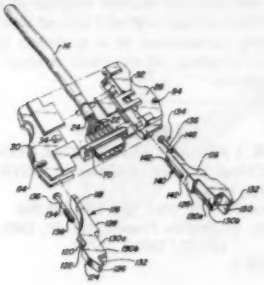
CONNECTOR HOOD CONSTRUCTIONS

William H. McKee, West Covina, Calif., and Thomas M. Steinbach, Park Ridge, Ill., assignors to TRW Inc., Elk Grove Village, Ill.

Continuation of Ser. No. 14,355, Feb. 23, 1979, abandoned. This application Sep. 16, 1980, Ser. No. 187,544
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—106 **14 Claims**

1. In a hood construction for an electrical connector, mating hood portions for forming a first connector-receiving cavity in the mated condition; means on said hood portions for locking said hood portions together when said hood portions are urged into the mated condition; means for mounting a plurality of different connector interlocking means in each hood portion,

and a plurality of different connector interlocking means for detachably mounting in each hood portion mounting means; each of said different connector interlocking means being



adapted to releasably engage cooperative elements in fixed relationship to a second connector mating with a first connector disposed in said hood cavity to retain those connectors in fixed relationship with one another.

4,460,231

ELECTRICAL CONNECTOR

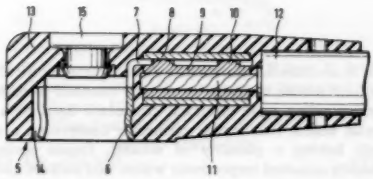
Edwin Muz, Reutlingen, Fed. Rep. of Germany, assignor to Nicolay GmbH, Kirchheim, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,591

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1981, 3106594

Int. Cl.³ H01R *11/22*

U.S. Cl. 339—113 R **5 Claims**



1. An electrical connector for forming an electrical connection between a conductor and a stud-shaped male contact member of the type having a head and a reduced-diameter portion behind the head, the connector comprising the combination of

a female contact member comprising

a generally cylindrical, conductive spring element for receiving said male contact member, said element having means therein defining a single axially extending slit forming an opening in said spring element,

a radially inwardly protruding annular portion adjacent one end of said spring element shaped to engage the reduced-diameter portion of said male contact member, and

a connecting lug unitarily formed on and extending away from the other end of said spring element;

means for joining said lug to the conductor; and

electrically nonconductive means forming a housing body molded onto and integrally enclosing the assembly comprising said female contact member, said means for joining and an end portion of the conductor and leaving exposed said one end of said spring element,

said housing body including means defining a radial gap adjacent the portion of said spring element having said slit at least when said male element is not received in said spring element so that said housing encloses and is in contact with the exterior of said spring element except in the area rear said slit.

4,460,232

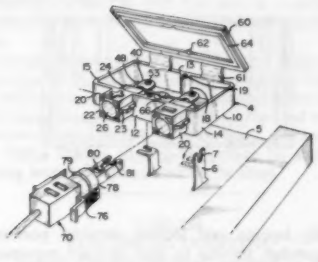
JUNCTION BOX FOR SOLAR MODULES

Thomas J. Sotolongo, Clearwater Beach, Fla., assignor to AMP, Incorporated, Harrisburg, Pa.

Filed May 24, 1982, Ser. No. 381,106

Int. Cl.³ H01R *9/16*

U.S. Cl. 339—122 R **1 Claim**



1. A junction box for mounting on a photovoltaic solar module, said junction box providing means for connecting plug members to two discrete bus bars in said solar module, said junction box comprising:

a dielectric housing having a floor, opposed first and second endwalls, and opposed first and second sidewalls, said floor having a planar external surface for mounting flush onto a solar module, said floor having aperture means for receiving connecting means attached to respective bus bars,

first and second dielectric receptacle members integral with said first endwall of said housing, each said receptacle member having a profiled axial bore therethrough, the axis of said bore being parallel to said floor of said housing,

first and second conductive terminal members having planar blade portions situated in the bores of respective receptacle members and planar bus terminating portions situated in said housing parallel to said floor over said aperture means, each said blade portion being in a plane perpendicular to the respective said bus terminating portion, said axis of each said bore lying parallel to the planes of both the bus terminating portion and the blade portion therein, whereby,

said bus terminating portions may be connected to said connecting means when said planar external surface of said housing is fixed to said module with said connecting means extending through said aperture means, said blade portions being connectable to terminals in plug members profiled to fit in said axial bores.

4,460,233

TELEPHONE TERMINAL ASSEMBLY

Kenneth C. Newton, Danbury, Conn.; Robert P. Wallace, Katonah, N.Y., and Ernst Ohnell, Greenwich, Conn., assignors to Programmed Marketing, Inc., Greenwich, Conn.

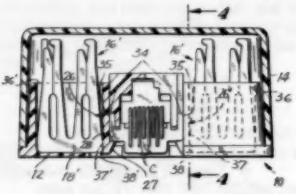
Filed Sep. 27, 1982, Ser. No. 424,049

Int. Cl.³ H01R *13/506*

U.S. Cl. 339—122 R **3 Claims**

1. A telephone interconnect device comprising a base portion of resilient polymeric material and a cover member removably mounted thereover, said base portion including an aperture, a pair of resiliently deflectible finger members integrally formed on said base portion, one said finger member

being disposed on each side of said aperture and defining a boundary thereof, said finger members including opposed cam surfaces converging in a direction toward the interior of said device and inwardly facing opposed detent portions in trailing position relative to said cam portions, a separable socket member retained in said aperture, said socket member including spaced lead shoulders positioned to engage said cam surfaces and outwardly deflect said finger members responsive to movement of said socket member into said aperture and outwardly facing locking shoulder portions, said detent portions of said fingers, in the inserted position of said socket member,



outwardly lapping said locking shoulder portions of said socket member, thereby to limit outward movement of said socket member from said aperture, complemental stop portion means on said base portion and socket member limiting inward relative movement of said socket member and base portion, and at least two separable locking members mounted on said base portion at opposite sides of said aperture, said locking members being positioned adjacent surfaces of said fingers opposite said aperture to lock said fingers against outward deflecting movements whereby said socket member is fixedly secured in said aperture.

4,460,234

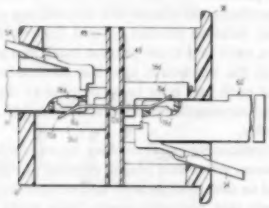
DOUBLE-ENDED MODULAR JACK

Charles E. Bogese, Roanoke, Va., assignor to Virginia Patent Development Corporation, Roanoke, Va.

Filed Sep. 18, 1981, Ser. No. 303,603

Int. Cl.³ H01R *9/03*

U.S. Cl. 339—128 **54 Claims**



1. A double-ended modular jack, which comprises:

a dielectric housing having first and second ends, a central housing portion, first and second plug-receiving cavities extending inwardly from said first and second ends, respectively, said first and second cavities adapted to receive, respectively, first and second modular plugs therein, and partition means extending approximately through said central housing portion;

said modular plugs each including a plurality of substantially planar, side-by-side, insulation-piercing contact terminals;

a plurality of electrical conductors positioned in a side-by-side spaced apart fashion in said housing, each of said conductors including a central portion and first and second spring contact portions extending generally outwardly from respective ends of said central portion into said first and second cavities, respectively, towards said first and second ends of said housing, respectively, said partition means including means for supporting said central portions of said conductors;

said first and second spring contact portions adapted to establish electrical contact with said contact terminals located in said first and second modular plugs, respectively, the ends of said first and second spring contact portions being unrestrained so as to deflect freely upon making and breaking of electrical contact with said contact terminals.

4,460,235

ADAPTER FOR A FEMALE ELECTRICAL CONNECTOR

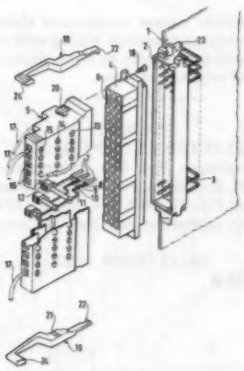
Claude Gelin, Créteil, France, assignor to CGEE Alsthom, Levallois-Perret, France

Filed Jun. 30, 1982, Ser. No. 394,008

Claims priority, application France, Jun. 30, 1981, 81 12870

Int. Cl.³ H01R *13/50*

U.S. Cl. 339—154 R **3 Claims**



1. In combination, an adapter and a female electrical connector, said female electrical connector intended to mate with a corresponding male electrical connector fixed to a printed circuit board, said female connector comprising a moulded body having a plurality of sockets, female spring blade contacts mounted respectively within said sockets, said female spring blade contacts having a connection tail, said adapter comprising a moulded body fit on and being fixed to said female connector, said adapter body housing a plurality of screw terminals, each screw terminal being connected via a corresponding tongue to the contact tail of a corresponding one of said female spring blade contacts, said tongues being soldered to the connection tails, and said screw contacts being capable of receiving at least two electrical conductors of total cross section not less than 1.5 mm^2.

4,460,236

TEST APPARATUS FOR ELECTRICAL CIRCUIT BOARDS

Michael G. Strautz, Columbus, Ohio, assignor to AT&T Bell Laboratories, Murray Hill, N.J.

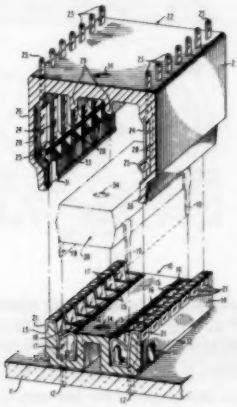
Filed Dec. 17, 1981, Ser. No. 331,529

Int. Cl.³ H01R *9/00*

U.S. Cl. 339—176 M **7 Claims**

3. An electrical circuit test assembly comprising an electrical component receptacle having first and second rows of electrical contacts each with a pair of blades adapted to receive and clasp one terminal of corresponding first and second rows of terminals of said components, said receptacle having a pair of opposite side walls presenting outer surfaces of said receptacle, the contacts of each of said rows having one of said blades

formed as an extension presenting an external contact surface extending over an upper portion an downward flush against an outer surface of each of said side walls, and a test plug comprising a rectangular body having an upper surface and having a pair of skirts extending at the sides substantially at right angles in the same direction from said upper surface, said skirts being spaced apart to fit over said receptacle along said side walls,



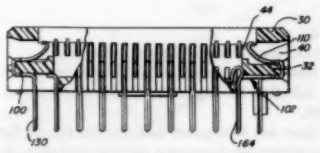
and a first and second plurality of test terminals extending from said upper surface of said body, said test terminals terminating in a first and second row of contact springs extending from an under surface of said body within said pair of skirts, said first and second row of springs being spaced to engage and make electrical contact with respective contact surfaces positioned flush against said side walls when said skirts are fitted over said receptacle.

4,460,237

CONTACTS FOR CHIP CARRIER SOCKET

Vincent B. Brown, Prospect Heights, and Robert F. Schlacks, Mount Prospect, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Dec. 30, 1981, Ser. No. 335,726
Int. Cl.³ H01R 9/00
U.S. Cl. 339—176 MP **9 Claims**



8. In a chip carrier socket for connecting an active semi-conductive chip to an electrical circuit comprising:

a socket housing, first contact means mounted on said socket housing and having a plurality of upper ends for contacting the chip carrier and a plurality of lower ends for connection to the electrical circuit;

second contact means mounted on said socket housing and having a plurality of upper ends for contacting the chip carrier and a plurality of lower ends for connection to the electrical circuit;

each of said upper ends of the first contact means being arrange in side by side relationship with an upper end of said second contact means along a first axis;

said lower ends of said first and second contact means being arranged in alternate pairs, each pair being aligned along a second axis perpendicular to said first axis;

said first and second contact means each include a generally U-shaped base section positioned between said upper and lower ends;

said upper ends of said first and second contact means are the curved free ends of cantilevered arms;

said lower ends are partially formed by a depending portion of said first and second contact means extending perpendicular to said U-shaped base section;

said depending portion of said second contact means is connected to said U-shaped base section by a leg member extending parallel to said first axis in a perpendicular relationship to said base section and said depending portion;

said second contact means includes locking means to engage a portion of the socket housing in a locking relationship;

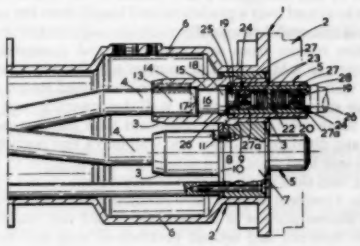
said locking means having looped member extending above said depending portion and having a free end to engage a shoulder formed on said socket housing, said looped member being flexible to snap into place on said shoulder during insertion into said socket housing.

4,460,238

ELECTRICAL COUPLING

Hugh C. Ireland, Coylton, Scotland, assignor to Simplex-GE (Holdings) Limited, Stoke-on-Trent, England

Filed Apr. 21, 1982, Ser. No. 370,753
Int. Cl.³ H01R 13/15
U.S. Cl. 339—255 R **4 Claims**



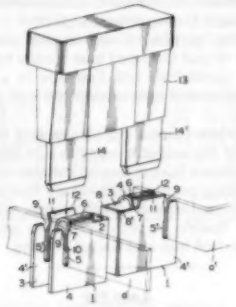
1. An electrical coupling pin for interconnecting two electrical cable terminal sockets, at least one of said sockets having a male contact member with a tapered end portion, said coupling pin including a hollow, generally tubular, electrically conductive member having a radially inner contact surface and a longitudinal axis; two contact members of electrically conductive material mounted for relative movement there between along the longitudinal axis of said tubular member, at least one of said contact members comprising at least two segmental members each having a radially outer contact surface for contacting the the radially inner contact surface of said tubular member and having at least one radially inner contact surface in the form of a respective segment of a conical or frusto conical surface formed for substantially closely contacting, in use, a said male contact member tapered end portion, said segmental members being formed and arranged so that in use of said coupling pin, said male contact member tapered end portion engages said segmental member radially inner contact surfaces with a force fit clamping the segmental members radially outer contact surfaces against the radially inner contact surface of the tubular member, thereby providing positive electrical contact between said male contact member and said segmental contact members and between said segmental members and said tubular members; means for electrically interconnecting said two contact members in use through said tubular member; and means mounted in said tubular member for resiliently biasing said two contact members away from each other.

4,460,239

CONNECTOR TERMINAL

Nori Inoue, Suzuka, Japan, assignor to Tokai Electric Wire Company Limited, Yokkaichi, Japan

Filed May 17, 1982, Ser. No. 378,722
Claims priority, application Japan, Mar. 11, 1981, 56-33827
Int. Cl.³ H01R *11/22*
U.S. Cl. 339—258 F **4 Claims**



1. A connector terminal for use with a junction block incorporating therein a number of conductor strips, comprising: a base plate; a pair of opposing side walls extending from both side edges of said base plate substantially at a right angle to the plane of said base plate; a slot formed in one of said side walls so as to extend over a predetermined length from the upper end of said side wall downwardly to divide said side wall into a first portion remote from said base plate and a second portion adjacent to said base plate; another slot formed in the other side wall and extending over a predetermined length from the upper end of said other side wall downwardly, said another slot being substantially in alignment with the first-mentioned slot and dividing the other side wall into a first portion remote from said base plate and a second portion adjacent to said base plate, said slots being adapted to receive one of said conductor strips; a resilient contact piece extending from the upper end of said second portion of at least one of said side walls into the space between said second portions of both side walls, said resilient contact piece constituting a receptacle for receiving a male tab, said receptacle extending from the upper end of said second portion of at least one of the side walls and curved to convex upwardly and then extending downwardly into said space gradually away from the upper end of said at least one side wall to progressively converge downwardly into said space toward the other of said side walls.

4,460,240

SEMICONDUCTOR LASER SCANNING SYSTEM

Kenneth C. Hudson, Philadelphia, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,548
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.8 **19 Claims**

1. An apparatus for forming a single scanning beam of light from two separated light sources, said apparatus comprising:

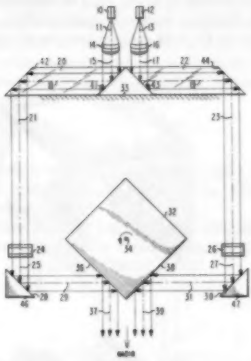
first lens means responsive to said light sources for providing first and second light beams collimated in a first direction;

optical transmission means for translating and separating said first and second collimated light beams;

second lens means responsive to said translated and separated first and second collimated light beams for providing third and fourth light beams collimated in a second direction, said second direction being orthogonal to said first direction;

means for redirecting said third and fourth light beams; and

a polyhedron having at least two conterminous light-reflecting facets, said polyhedron being rotatably mounted along an axis of said polyhedron, said axis being parallel to each of said light-reflecting facets, said polyhedron further being positioned so that said redirected third and fourth



light beams impinge on two adjacent light-reflecting facets of said polyhedron and, when reflected therefrom, form said single scanning beam of light which scans across a target surface as said polyhedron rotates.

4,460,241

TELECOMMUNICATION SYSTEM WITH FIBERGUIDE SIGNAL FILTERING

Leonard G. Cohen, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 24, 1981, Ser. No. 256,982
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.20 **14 Claims**

1. A telecommunication system comprising

(a) at least one source of pulsed electromagnetic radiation, the radiation having a center wavelength and a spectral width,

(b) at least one fiberguide link, the fiberguide having minimum chromatic dispersion at a first wavelength, and a loss spectrum comprising a background loss and at least one absorption peak, and

(c) means for coupling at least part of the emitted radiation into the fiberguide,

characterized in that

(d) the fiberguide is selected to have an absorption peak, centered at a second wavelength near the first wavelength, of strength sufficient to result in a fiber loss of at least about 0.5 dB/km above the background loss at the second wavelength, and

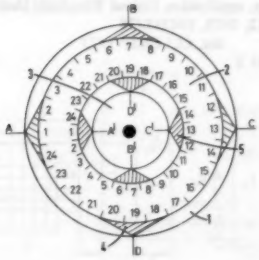
(e) the source is selected to have the center wavelength of the emitted radiation between the first and second wavelengths and differing from the first wavelength by at least about 10% of the spectral width, or 0.01 μm, whichever is less.

4,460,242

OPTICAL SLIP RING

Ernest H. Birch, and Andres Lobato, both of Reading, England, assignors to I.D.M. Electronics Limited, Reading, England

Filed May 25, 1982, Ser. No. 381,710
Int. Cl.[3] G02B 5/14, 5/16
U.S. Cl. 350—96.20 3 Claims



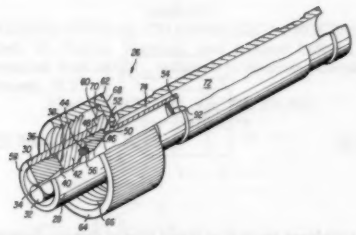
1. An optical slip ring comprising a rotatable output member and a second rotatable member located intermediate the rotatable output member and a stationary input member, said input member having a plurality of spaced light inputs, said output member having a corresponding number of correspondingly spaced light outputs and said intermediate member having a plurality of bundles of optical fibres for transmitting light from the light inputs on the input member to the light outputs on the output member, the relative positions of the input and output ends of each bundle of fibres being such that during rotation of the output and intermediate members, a continuous output is produced from an output member in response to light applied to a corresponding input of the stationary member only when the intermediate member is rotated at half the speed of the output member.

4,460,243

OPTICAL FIBER CONNECTOR

Ross W. Strait, Jr., Madison, Conn., assignor to Times Fiber Communications, Inc., Wallingford, Conn.

Filed Apr. 29, 1982, Ser. No. 373,109
Int. Cl.[3] G02B 7/26
U.S. Cl. 350—96.21 12 Claims



1. A connector for coupling the ends of two lengths of optical fiber in contiguous, aligned position comprising two connector assemblies, each connector assembly comprising:

(a) a three-pin sub-assembly comprising three like-size, generally cylindrical, rigid pins extending parallel to each other in contiguous relationship, said pins having a diameter such that an inscribed circle extending tangent to the pin circumferences in the interior space between the pins substantially corresponds to the diameter of a length of optical fiber;

(b) first retaining means for securely retaining the pins of the sub-assembly in contiguous relationship, the interior space extending between the circumferences of the pins defining a chamber for receiving a length of optical fiber;

(c) second retaining means for aligning the distal ends of the pins of the sub-assembly so that they co-terminate precisely together;

(d) thermally responsive retaining means positioned circumferentially inward of said second retaining means for securing an optical fiber within the chamber defined by the three pins of the sub-assembly; and

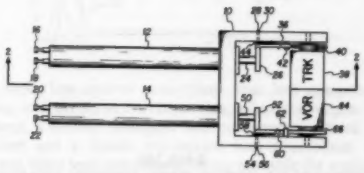
(e) coupling means for connecting the connector assembly to its mating connector assembly.

4,460,244

SPLIT PRISMATIC ANNUNCIATOR

Carey S. Cole, Marion, Iowa, and William B. Noble, Santa Monica, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 15, 1982, Ser. No. 441,821
Int. Cl.[3] G09F 11/00; G08G 5/00
U.S. Cl. 350—112 6 Claims



1. Annunciator apparatus comprising, in combination:

support means;

first and second push-pull drive means attached to said support means;

first and second multisurface prism means attached to said support means;

separate gear means connecting said first and second drive means respectively to said first and second multiprism means respectively; and

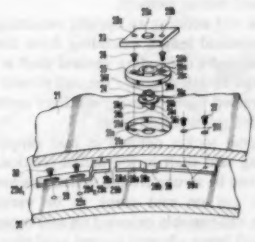
separate biasing means attached to said support means and connected to each of said gear means for maintaining an interactive force between the teeth of said gear means to reduce backlash.

4,460,245

LENS MOUNTING

Seiichi Shimizu, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1981, Ser. No. 329,937
Claims priority, application Japan, Dec. 18, 1980, 55-180197
Int. Cl.[3] G02B 7/02
U.S. Cl. 350—253 8 Claims



1. In a lens mounting provided with a fixed barrel having an index on the outer periphery thereof and a focusing actuator rotatably arranged on the outer periphery of said fixed barrel

and having a distance scale arranged in cooperative relationship with said index, the improvement of means for adjusting the stopped position of said focusing actuator in accordance with the ambient temperature at which said lens mounting is used, comprising:

(a) a stopping member for stopping rotation of said actuator, said stopping member having a plurality of stopping portions to change the amount of rotation of said actuator in response to the ambient temperature;

(b) an engaging member fixedly secured to said actuator and arranged to engage one of the plurality of stopping portions of said stopping member; and

(c) a selecting member operative upon engagement with said engaging member to select a stopping position between said engaging member and said stopping member, said selecting member being responsive to actuation from the outside for selecting one of the plurality of stopping portions of said stopping member.

4,460,246

EXTENSIBLE MIRROR WITH HIDDEN EXTENDING MECHANISM

David D. Peel, 11311 Ganesta Rd., San Diego, Calif. 92126

Filed May 5, 1982, Ser. No. 375,063

Int. Cl.³ G02B *5/08, 5/10*; A47B *67/00*; A47G *1/00*

U.S. Cl. 350—305 **9 Claims**

1. An extensible mirror with a hidden support mechanism comprising:

(a) a stationary support member;

(b) a framed mirror element;

(c) a crank rod defining an upright mounting post, a generally horizontal length extending from the lower end of said post, and a depending vertical shaft at the end of said horizontal length opposite the end of said post;

(d) said framed mirror having a mirror socket receiving in journalled relation said post;

(e) a support socket defined in said support member for receiving said shaft in journalled relation, whereby said mirror can be swung from a seated positon to a deployed position out on said crank to be variably positioned thereon and variably oriented on said mounting post; and,

(f) said shaft being allowed limited axial play in said support socket and said support defining an elongated frontal barrier behind which said horizontal length rests when said mirror is in its seated position with said shaft at the lowest extent of its allowed play.

4,460,247

TEMPERATURE COMPENSATED LIQUID CRYSTAL DISPLAYS

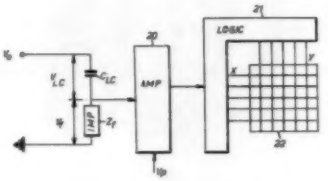
Cyril Hilsum, and Edward P. Raynes, both of Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Dec. 20, 1978, Ser. No. 971,240

Claims priority, application United Kingdom, Dec. 20, 1977, 53041/77; Apr. 12, 1978, 144241/78

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—331 T **10 Claims**



1. A method of compensating for threshold voltage variation with liquid crystal temperature of a liquid crystal display cell comprising the steps of applying a voltage between a critical value and a saturation value to at least a part of a liquid crystal layer, monitoring the capacitance of that part of the layer and using capacitance changes with temperature to control voltage levels applied to the cell.

4,460,248

TWO-LAYER GUEST-HOST LIQUID CRYSTAL DISPLAY DEVICE

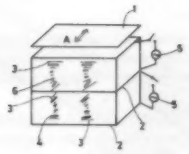
Yoshihiro Shirai, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 25, 1981, Ser. No. 324,684

Claims priority, application Japan, Nov. 28, 1980, 55-169318

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—335 **3 Claims**



1. A two-layer guest-host liquid crystal display device, each guest-host liquid crystal layer being sandwiched between a pair of substrates provided with electrodes for applying an electric field to said respective liquid crystal layers, comprising:

a first display layer comprising a P-type pleochroic dye material and a first liquid crystal material; and

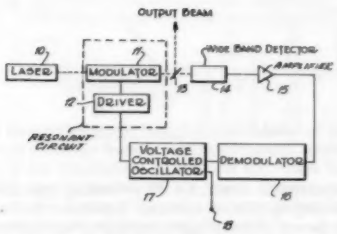
a second display layer comprising an N-type pleochroic dye material and a second liquid crystal material such that upon controlled orientation of said dye materials with respect to the substrates a single color or dual color display can be provided on a background of a single solid color.

4,460,249

CONTROL SYSTEM FOR AN OPTICAL MODULATOR

Denis M. Vincent, Sainte Foy, Canada, assignor to Minister of National Defense of Her Majesty's Canadian Government, Ottawa, Canada

Filed Oct. 6, 1981, Ser. No. 309,104
Claims priority, application Canada, Oct. 27, 1980, 363291
Int. Cl.³ G02F 1/03
U.S. Cl. 350—356 4 Claims



1. A control system for an optical modulator, said optical modulator used to modulate the intensity of a laser beam to produce a modulated laser output beam wherein transmission of the modulator is a non-linear function of its driving frequency, the control system comprising:

a wide-band detector means responsive to a sampled portion of the modulated laser output beam for providing a first signal;

a demodulator means responsive to said first signal for providing a control voltage proportional to the amplitude of the modulating frequency component of said first signal;

a bias voltage source means for providing a bias voltage;

a voltage controlled oscillator means responsive to the sum of said bias voltage and said control voltage for providing an output at said driving frequency; and

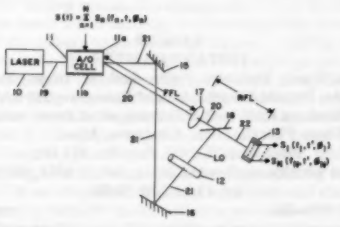
driver circuit means for the modulator and responsive to the output from the oscillator means, said driver circuit means and modulator constituting a resonant circuit such that any variation in the frequency supplied to said resonant circuit results in a variation of the amplitude of the output beam so that the intensity of the laser beam is stabilized.

4,460,250

ACOUSTO-OPTICAL CHANNELIZED PROCESSOR

Frederick W. Freyre, Wantagh, and Richard LaRosa, South Hempstead, both of N.Y., assignors to Hazeltine Corporation, Commack, N.Y.

Filed Jun. 17, 1981, Ser. No. 274,611
Int. Cl.³ G02F 1/11
U.S. Cl. 350—358 10 Claims



1. Apparatus for detecting frequency components of a signal comprising:

(a) first means for converting a supplied signal into corresponding acoustic waves propagating through a medium; and

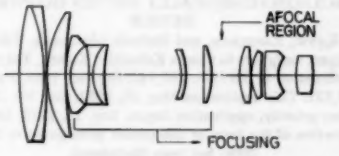
(b) second means for optically detecting the frequency components of the corresponding acoustic waves, whereby the frequency components correspond to the components of the signal.

4,460,251

ZOOM LENS FOCUSING SYSTEM

Sadao Okudaira, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1980, Ser. No. 173,213
Claims priority, application Japan, Jul. 28, 1979, 54-96586
Int. Cl.³ G02B 9/64, 13/12, 15/18
U.S. Cl. 350—427 4 Claims



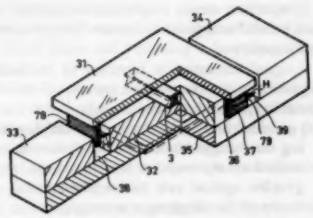
1. A zoom lens system comprising: four lens components including, in order from the object side, a first convergent lens component, a second divergent lens component, a third lens component and a fourth convergent lens component, said second and third lens components being movable for zooming, said second lens component serving mainly as a variator and said third lens component serving mainly to maintain the focusing distance constant, said four lens components including an afocal region downstream of said third lens component, where the downstream direction is defined as the direction away from said object side, all of the lenses from said second lens component to said afocal region comprising a focusing lens component, and wherein focusing adjustment to compensate for object distance variation is carried out by integrally moving said focusing lens component with respect to said first convergent lens component to thereby reduce the degradation of aberration due to object distance variation.

4,460,252

ELECTRICALLY CONTROLLED OPTICAL DEFLECTOR

Patrick Volleau; Michel Chaboche, and Claude Bricot, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 21, 1981, Ser. No. 285,565
Claims priority, application France, Jul. 22, 1980, 80 16129
Int. Cl.³ G02B 27/17
U.S. Cl. 350—486 6 Claims



1. An electrically controlled optical deflector, comprising:

a fixed base;

a prismatic elastic pivoting component, having two parallel supporting surfaces, mounted on said fixed base, one of said supporting surfaces being fixed to said base;

a movable assembly including a mirror pivotably mounted to

and having a distance scale arranged in cooperative relationship with said index, the improvement of means for adjusting the stopped position of said focusing actuator in accordance with the ambient temperature at which said lens mounting is used, comprising:

(a) a stopping member for stopping rotation of said actuator, said stopping member having a plurality of stopping portions to change the amount of rotation of said actuator in response to the ambient temperature;

(b) an engaging member fixedly secured to said actuator and arranged to engage one of the plurality of stopping portions of said stopping member; and

(c) a selecting member operative upon engagement with said engaging member to select a stopping position between said engaging member and said stopping member, said selecting member being responsive to actuation from the outside for selecting one of the plurality of stopping portions of said stopping member.

4,460,246

EXTENSIBLE MIRROR WITH HIDDEN EXTENDING MECHANISM

David D. Peel, 11311 Ganesta Rd., San Diego, Calif. 92126

Filed May 5, 1982, Ser. No. 375,063

Int. Cl.³ G02B *5/08, 5/10*; A47B *67/00*; A47G *1/00*

U.S. Cl. 350—305 **9 Claims**

1. An extensible mirror with a hidden support mechanism comprising:

(a) a stationary support member;

(b) a framed mirror element;

(c) a crank rod defining an upright mounting post, a generally horizontal length extending from the lower end of said post, and a depending vertical shaft at the end of said horizontal length opposite the end of said post;

(d) said framed mirror having a mirror socket receiving in journalled relation said post;

(e) a support socket defined in said support member for receiving said shaft in journalled relation, whereby said mirror can be swung from a seated positon to a deployed position out on said crank to be variably positioned thereon and variably oriented on said mounting post; and,

(f) said shaft being allowed limited axial play in said support socket and said support defining an elongated frontal barrier behind which said horizontal length rests when said mirror is in its seated position with said shaft at the lowest extent of its allowed play.

4,460,247

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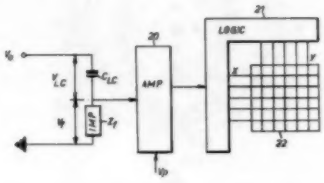
Cyril Hilsum, and Edward P. Raynes, both of Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Dec. 20, 1978, Ser. No. 971,240

Claims priority, application United Kingdom, Dec. 20, 1977, 53041/77; Apr. 12, 1978, 144241/78

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—331 T **10 Claims**



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TWO-LAYER GUEST-HOST LIQUID CRYSTAL DISPLAY DEVICE

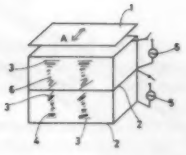
Yoshihiro Shirai, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 25, 1981, Ser. No. 324,684

Claims priority, application Japan, Nov. 28, 1980, 55-169318

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—335 **3 Claims**



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Claims priority, application Canada, Oct. 27, 1980, 363291
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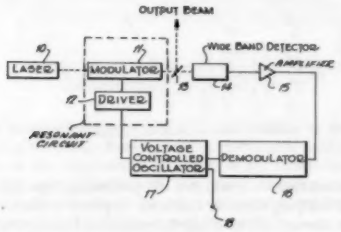
U.S. Cl. 350—356 4 Claims



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a demodulator means responsive to said first signal for providing a control voltage proportional to the amplitude of the modulating frequency component of said first signal;

a bias voltage source means for providing a bias voltage;

a voltage controlled oscillator means responsive to the sum of said bias voltage and said control voltage for providing an output at said driving frequency; and

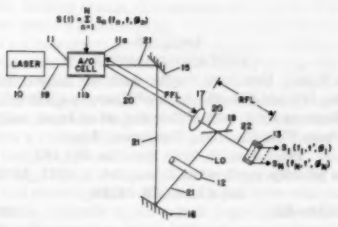
driver circuit means for the modulator and responsive to the output from the oscillator means, said driver circuit means and modulator constituting a resonant circuit such that any variation in the frequency supplied to said resonant circuit results in a variation of the amplitude of the output beam so that the intensity of the laser beam is stabilized.

4,460,250

ACOUSTO-OPTICAL CHANNELIZED PROCESSOR

Frederick W. Freyre, Wantagh, and Richard LaRosa, South Hempstead, both of N.Y., assignors to Hazeltine Corporation, Commack, N.Y.

Filed Jun. 17, 1981, Ser. No. 274,611
Int. Cl.³ G02F 1/11
U.S. Cl. 350—358 10 Claims



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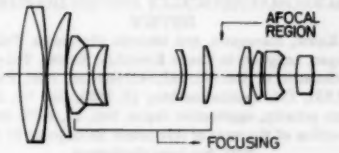
Filed Jul. 28, 1980, Ser. No. 173,213
Claims priority, application Japan, Jul. 28, 1979, 54-96586
Int. Cl.³ G02B 9/64, 13/12, 15/18
U.S. Cl. 350—427 4 Claims



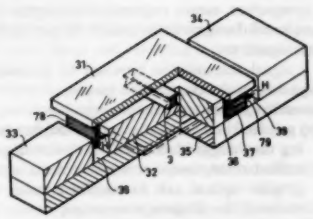
1. A zoom lens system comprising: four lens components including, in order from the object side, a first convergent lens component, a second divergent lens component, a third lens component and a fourth convergent lens component, said second and third lens components being movable for zooming, said second lens component serving mainly as a variator and said third lens component serving mainly to maintain the focusing distance constant, said four lens components including an afocal region downstream of said third lens component, where the downstream direction is defined as the direction away from said object side, all of the lenses from said second lens component to said afocal region comprising a focusing lens component, and wherein focusing adjustment to compensate for object distance variation is carried out by integrally moving said focusing lens component with respect to said first convergent lens component to thereby reduce the degradation of aberration due to object distance variation.

4,460,252

ELECTRICALLY CONTROLLED OPTICAL DEFLECTOR

Patrick Volleau; Michel Chaboche, and Claude Bricot, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 21, 1981, Ser. No. 285,565
Claims priority, application France, Jul. 22, 1980, 80 16129
Int. Cl.³ G02B 27/17
U.S. Cl. 350—486 6 Claims



1. An electrically controlled optical deflector, comprising:

a fixed base;

a prismatic elastic pivoting component, having two parallel supporting surfaces, mounted on said fixed base, one of said supporting surfaces being fixed to said base;

a movable assembly including a mirror pivotably mounted to

the other supporting surface of said pivoting component, said other supporting surface fixed along a center-line on an underside of said mirror;

magnet inductor means mounted on said fixed base and including at least two air gaps for producing a magnetic field within said at least two air gaps; and

a winding mounted on said movable assembly and having two opposite sides disposed in respective of said two air gaps.

4,460,253

ELECTROMAGNETICALLY DRIVEN DIAPHRAGM DEVICE

Tohru Kawai, Kanagawa, and Makoto Masunaga, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

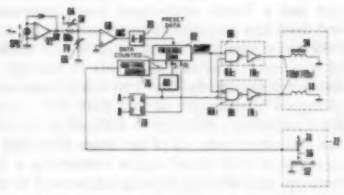
Continuation of Ser. No. 187,742, Sep. 16, 1980, Pat. No. 4,367,931. This application May 19, 1982, Ser. No. 379,908

Claims priority, application Japan, Sep. 17, 1979, 54-119047

The portion of the term of this patent subsequent to Jan. 11, 2000, has been disclaimed.

Int. Cl.³ G03B *7/095, 9/07*

U.S. Cl. 354—446 **1 Claim**



1. For a camera having:

(1) photosensing means for sensing light from an object and passing through a diaphragm aperture of an exchangeable lens;

(2) first computation means responsive to said photosensing means to compute an exposure value based on an amount of light from an object being introduced into said photosensing means through wide open diaphragm blades of the exchangeable lens;

(3) second computation means to compute an exposure value corresponding to a diaphragm aperture and varying with a stop down operation of the diaphragm blades of the exchangeable lens;

(4) comparison means responsive to outputs from said first and second computation means for producing a comparison signal; and

(5) a signal transmission terminal to transmit said output signal from the comparison means,

said exchangeable lens comprising:

(a) an electromagnetically driven diaphragm device having diaphragm blades and an electromagnetically controlled rotary member which rotates around a photographic optical axis to control opening and stopping down of the diaphragm aperture;

(b) means to stop rotation of the rotary member of the diaphragm device, and stopping means having an electromagnetic device controllable by the output of the comparison means of the camera; and

(c) a signal terminal for receiving an electric signal from the camera and connected with the signal transmitting terminal.

4,460,254

INSTANT CAMERA

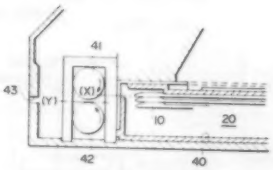
Yoshio Hara, and Tadayoshi Shibata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 18, 1982, Ser. No. 379,541

Claims priority, application Japan, May 26, 1981, 56-79918

Int. Cl.³ G03B *17/50*

U.S. Cl. 354—86 **4 Claims**



1. An instant camera in which a self-processing type film unit having a developing solution container disposed in the leading end portion thereof and an image forming area bearing thereon a photosensitive layer is fed in between a pair of parallel spreading rollers after exposure to light, the rollers being adapted to be rotated nipping therebetween the film unit to discharge the same outside the camera body and the developing solution container being adapted to be broken by nipping force of the rollers when passed therebetween to release the developing solution contained therein, whereby the released solution is spread over the image forming area pushed by the rollers to develop the image on the spot, the improvement comprising said film unit being fed toward the spreading rollers so that at the time when the film unit is initially brought into contact with one of the spreading rollers, one of the major surfaces of the film unit lies in a plane offset from the plane perpendicular to the plane including both the longitudinal axes of the spreading rollers and tangent to the point of contact on the spreading roller by said one major surface of the film unit, said film units stacked in a container having an outlet opening to form a film package with the leading end of each film unit directed toward the outlet opening, and the film package is loaded in the camera body in a position with respect to said spreading rollers in which the film unit discharged through the outlet opening is fed toward the spreading rollers with said one major surface thereof being moved along a plane offset from said plane perpendicular to the plane including both the longitudinal axes of the spreading rollers and tangent to the spreading roller with which said one major surface is to be brought into contact, and said film package is loaded in the camera body so that said film unit is fed in a plane parallel to and offset from the plane perpendicular to the plane including both the longitudinal axes of the spreading rollers and tangent to the spreading roller with which said one major surface of the film unit is to be brought into contact, in a direction perpendicular to the former plane.

4,460,255

INSTANT CAMERA

Katsuya Kozai; Yoshihiro Fujita, both of Tokyo; Tadayoshi Shibata; Hisashi Kikuchi, both of Kanagawa; Hiroshi Nakai, and Hirokazu Ichii, both of Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 25, 1982, Ser. No. 392,192

Claims priority, application Japan, Jul. 3, 1981, 56-104889

Int. Cl.³ G03B *17/50*

U.S. Cl. 354—86 **10 Claims**

1. An instant camera in which a self-processing type film unit is passed between a pair of spreading rollers positioned in the same longitudinal direction so as to contact with each other, and then be ejected to the exterior of the camera while a container means in said film unit is torn by a nipping force due to

said spreading rollers casuing a development processing solution contained in said container means to be spread and distributed in a predetermined image forming region, characterized in that said pair of spreading rollers are formed in such a manner that the clearance between said spreading rollers over said

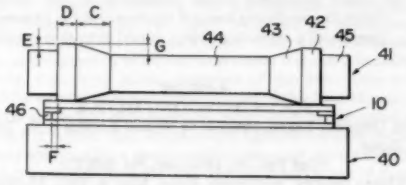


image forming region is larger in the vicinity of the central section of the image forming region, the central sections of said rollers in the longitudinal direction of the rollers being adjacent the central portion of the image forming region and smaller in the vicinity of the roller ends contacting the edges of the image forming region in said film unit.

4,460,256

FILM FEEDING SYSTEM OF A CAMERA

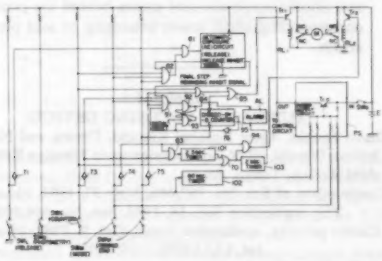
Kunihiko Araki, Tokyo; Susumu Iguchi, Yokohama; Tadafumi Ohguro, Tokyo; Yoshimi Ono, Kawasaki; Koichi Nishi, Yokohama; Yoshio Fukushima, Tokyo; Satoshi Yamane, Kobe, and Hirofumi Horigome, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 20, 1981, Ser. No. 323,686

Claims priority, application Japan, Nov. 26, 1980, 55-166105; Nov. 26, 1980, 55-166106; Nov. 26, 1980, 55-166107; Nov. 26, 1980, 55-166108; Nov. 26, 1980, 55-166109; Nov. 26, 1980, 55-166110; Nov. 26, 1980, 55-166111; Nov. 26, 1980, 55-166112; Nov. 26, 1980, 55-166113

Int. Cl.³ G03B *1/18, 1/66, 17/36*

U.S. Cl. 354—173.11 **16 Claims**



1. A film feeding system of a camera of the type in which a roll of film inside a film cartridge is first completely wound to a spool of the camera to perform a preliminary winding operation and then the film is rewound into said cartridge one frame after another upon each exposure, said system comprising:

a camera body provided with a film cartridge receiving chamber for-receiving therein a film cartridge containing therein a roll of film and a spool rotatably supported by said body as spaced apart from said chamber, said body including a back cover which may be opened for loading said film cartridge into or unloading it from said chamber;

a reversably rotatable motor which is provided in said body and may be driven to rotate either in a normal or reversed direction;

means for transmitting the driving power of said motor to have said film wound to said spool when said motor is driven to rotate in the reversed direction and then intermittently rewound into said film cartridge when said motor is driven to rotate in the normal direction; and

control means for controlling the driving of said motor, said control means including a first switch means having at least first and second conditions for indicating the absence and presence of said film cartridge in said chamber, respectively, a second switch means having at least first and second conditions for indicating the opened and closed conditions of said back cover, respectively, and first driving means, connected to said first and second switch means, for driving said motor to rotate in the reversed direction when said first switch means is in the second condition which indicates the presence of said film cartridge in said chamber and said second switch means is in the second condition which indicates that said back cover is closed, whereby said film is wound to said spool to perform the preliminary winding operation.

4,460,257

FOCUS REGULATING DEVICE FOR CAMERA WITH AUTOMATIC EXPOSURE CONTROL

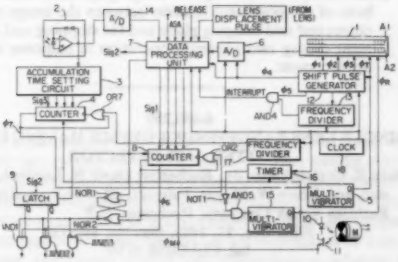
Akira Ogasawara, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 30, 1983, Ser. No. 480,494

Claims priority, application Japan, Apr. 3, 1982, 57-54793

Int. Cl.³ G03B *3/10, 7/091*

U.S. Cl. 354—402 **5 Claims**



1. A still camera equipped with means for focusing an image of an object on a determined plane and means for controlling the exposure to light of photosensitive means provided on said determined plane, comprising:

means for detecting the state of the image of the object on said determined plane and releasing a corresponding detection signal;

calculating means for storing said detection signal and calculating the positional relationship between said determined plane and the object image formed by said focusing means in response to said stored detection signal;

means for supplying interruption signals to said calculating means at a determined period;

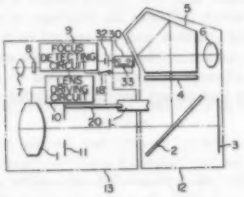
wherein said calculating means comprises means for effecting calculation for controlling the exposure of said photosensitive means according to the luminance of the object and in response to said interruption signals; and

means for inhibiting said interrupt signal at least during a period from the release of said detection signal by said detecting means to the storage of said detection signal by said calculating means.

4,460,258
LENS BARREL CONTAINING AN AUTOMATIC FOCUS MATCHING DEVICE THEREIN

Toru Fukuhara, Isehara, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 361,836, Mar. 25, 1982, abandoned.
This application Feb. 10, 1983, Ser. No. 465,541
Claims priority, application Japan, Mar. 31, 1981, 56-44449[U]
Int. Cl.³ G03B 3/10
U.S. Cl. 354—402 9 Claims



1. A lens barrel including an imaging optical system for forming an image of an object on a predetermined imaging plane through a diaphragm corresponding to a predetermined aperture value, said lens barrel being mountable to a camera body and capable, when mounted to the camera body, of making said diaphragm respond to the exposure operation of the camera, said lens barrel comprising:

an interlocking member displaceable in response to said exposure operation;

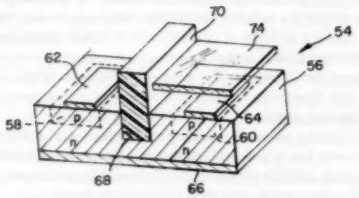
means provided in said imaging optical system for stopping down said diaphragm during said exposure operation on the basis of said predetermined aperture value in response to said displacement; and

control means for moving said imaging optical system on the basis of the positional relation between the image of said object and said imaging plane and for stopping said movement during said exposure operation in response to said displacement.

4,460,259
SINGLE LENS RANGEFINDER DEVICE HAVING LIGHT EMITTER AND DETECTOR

John E. Greivenkamp, Jr., Rochester; David N. Lambeth, Webster, and James W. Meyer, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,330
Int. Cl.³ G03B 3/10
U.S. Cl. 354—403 4 Claims



1. A rangefinder device, comprising:

(a) a single lens;

(b) an LED located with respect to said single lens for forming a beam of light said lens defining an effective aperture for said LED;

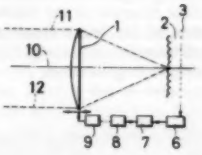
(c) a photodiode located with respect to said single lens to define a field of view overlapping with said beam of light in a detection region extending a predetermined distance from said lens, for detecting light reflected from an object located in said detection region to produce an electrical signal representative of said detected light, said lens defining an effective aperture for said photodiode, substantially coinciding with said effective aperture for said LED, and said LED and said photodiode being integrated on a common substrate; and

(d) signal processing means responsive to said electrical signal for producing a signal representing the presence or absence of a reflecting object in said detection region.

4,460,260
FOCUS DETECTING DEVICE

Ken Utagawa, Tokyo, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 25, 1983, Ser. No. 469,771
Claims priority, application Japan, Mar. 4, 1982, 57-34368
Int. Cl.³ G03B 3/00, 13/18
U.S. Cl. 354—406 10 Claims



1. A focus detecting device for detecting the focus position of an image forming system, comprising:

(1) plural arrays of small lenses, each of said arrays including plural small lenses arranged in a predetermined direction in the vicinity of a focal plane of said image forming system and said plural lens arrays being positioned mutually parallel;

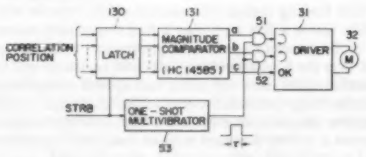
(2) plural photoelectric element means respectively corresponding to the small lenses of said lens arrays, each of said photoelectric element means being positioned behind a corresponding one of said small lenses; and

(3) means for synthesizing photoelectric output signals from said photoelectric element means behind the positionally corresponding small lenses belonging to said plural lens arrays.

4,460,261
AUTOMATIC FOCUSING DEVICE

Mitsuo Eguchi, Ageo; Yoshimi Kikuchi, Urawa, and Nobuyuki Ichino, Warabi, all of Japan, assignors to Mamiya Koki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 267,446, May 27, 1981, abandoned.
This application Feb. 14, 1983, Ser. No. 466,306
Claims priority, application Japan, Oct. 9, 1980, 55-141770
Int. Cl.³ G03B 3/10, 7/08
U.S. Cl. 354—408 1 Claim



1. An automatic focusing device comprising: intensity distribution detecting means having an accumulation mode image sensor with a charge accumulation time in independence upon the brightness of an object being photographed for detecting the intensity distribution of images of said object to be photo-

graphed and which are formed by light rays passing through different portions of an objective lens means of a photographing optical system in a photographing apparatus and for developing a video signal corresponding to said intensity distribution and the level which is not affected by the brightness of the object; a signal processing circuit for processing the video signal to determine whether the photographing apparatus optical system is focused or out of focus and for developing only when said optical system is out of focus a drive direction signal as an output to move said lens means towards a focusing position, lens drive means receptive of the drive direction signal for moving said lens under control of the drive direction signal in a direction determined by the drive direction signal as long as it is applied; and means in said signal processing circuit for only applying for a predetermined time said drive direction signal at each detection that the optical system is out of focus when the brightness of the object is low and when the brightness of the object is high applying it without interruption to said drive means until detection that the optical system is in focus irrespective of the charge accumulation time of said image sensor varying in response to the brightness of said object being photographed.

4,460,262

AUTOMATIC EXPOSURE CONTROL CIRCUIT FOR TTL AUTOMATIC ELECTRONIC FLASH

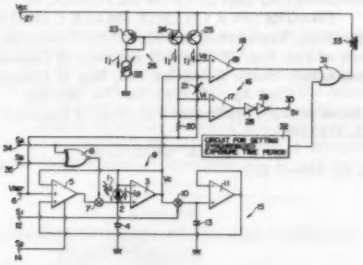
Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Nov. 19, 1982, Ser. No. 442,910

Claims priority, application Japan, Mar. 25, 1982, 57-47954; Mar. 25, 1982, 57-47955

Int. Cl.³ G03B *7/00, 15/05*

U.S. Cl. 354—414 **16 Claims**



1. An automatic exposure control circuit for a TTL automatic electronic flash for use with a camera adapted for photometry based upon reflection from a film surface and having the capability to control the emission of light from the TTL automatic electronic flash, comprising:

an integration circuit for integrating a photocurrent developed in a photometric, photoelectric transducer element which receives light reflected by a first shutter blind surface and a film surface exposed by running of said first blind surface;

an integration value return circuit for returning the output of said integration circuit to an integrated value which is developed at the time when said first shutter blind terminates its running, after a predetermined time period has elapsed upon termination of the running thereof;

a first decision circuit for delivering an emission terminate signal to said electronic flash whenever the output of said integration circuit reaches a first predetermined decision level;

a second decision circuit for delivering a run initiation signal for a second shutter blind whenever the output of said integration circuit reaches a second predetermined decision level; and

time period means for setting a synchronized exposure time period and gate means responsive to said time period setting means and said second decision circuit for preventing the generation of a run initiation signal for the second shutter at least until the time interval required for a full emission of the electronic flash is elapsed.

4,460,263

APPARATUS FOR CALCULATING AND DISPLAYING AND/OR CONTROLLING EXPOSURE PARAMETERS FOR PHOTOGRAPHIC PICTURES

Karl Gfeller, Langwiesen; Carl Koch, Stetten, and Hans C. Koch, Flurlingen, all of Switzerland, assignors to Sinar AG Schaffhausen, Feuerthalen, Switzerland

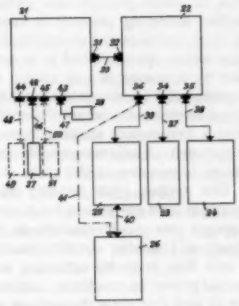
PCT No. PCT/CH81/00100, 371 Date May 7, 1982, 102(e) Date May 7, 1982, PCT Pub. No. WO82/01080, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 8, 1981, Ser. No. 377,209

Claims priority, application Switzerland, Sep. 11, 1980, 6837/80

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—415 **14 Claims**

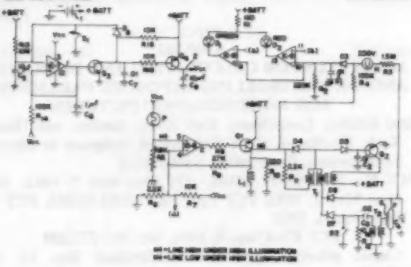


1. An apparatus for calculating and displaying the values of exposure parameters for photographic pictures, having electronic circuitries for the logic operation of the exposure parameter values which determine the exposure and which, in the form of electrical digitally coded signals, are input and output at signal inputs or signal outputs of the combinatorial logic circuitries, and having at least one display device, wherein a manually operated selector **(83, 291)** is assigned to the combinatorial logic circuitries **(130, 230)** for the selective programming of the combinatorial logic circuitries for the input and processing of measured values resulting from brightness measurements for continuous light or from exposure measurements for flashlight, wherein during the setting of the selector **(83, 291)** for exposure measurements for flashlight the combinatorial logic circuitries **(130, 230)** are programmed in such fashion that by means of a measured value obtained for a single test flash illumination they calculate the difference between the same and a nominal exposure value, including algebraic sign, and thereafter, by means of at least one digital display device **(97, 98)** indicate the same as a request for making a corresponding correction of at least one of the read-in exposure parameter values or of the flash illumination, and wherein the combinatorial logic circuitries **(130, 230)** are programmable in such fashion that in the presence of too low a measured value obtained for the test flash illumination the combinatorial logic circuitries **(130, 230)** calculate the number of successive equal flashes required for achieving the nominal exposure, and any residual difference in relation to the nominal exposure, and display the same by means of the display device **(97, 98)**.

4,460,264
ELECTRONIC CAMERA WITH AUTOMATIC BATTERY SHUTDOWN

Arthur J. Winter, Encino, Calif., assignor to W. Haking Enterprises, Ltd., Hong Kong, Hong Kong

Filed Sep. 1, 1981, Ser. No. 298,288
Int. Cl.³ G03B *15/05, 17/18, 17/38*
U.S. Cl. 354—419 **18 Claims**



1. In an electrically powered camera having a battery, a manually actuatable non-latching switch having a stable power-off condition to which position said switch reverts when externally applied actuating pressure is removed from said switch, and at least one electrical system load to be associated with the picture taking operation and to be actuated to a power-on condition by actuation of said switch to an energizing power on condition, the improvement comprising:

an MOS timed monostable circuit powered by said battery and having a first output terminal connected to said at least one system load, said monostable circuit having two output states responsive to the state of said switch, an unstable first output state directly switching battery power to said at least one system load, and a stable second state causing a power-off condition to said at least one system load, said astable circuit actuated from second state to said first state by actuating said non-latching switch to said power-on condition, said monostable circuit remaining in said first state throughout actuation of said non-latching switch and for a given period of time after said reversion of said switch to said stable second state, said monostable circuit reverting to said power-off state after passage of said given period of time, thereby disconnecting battery power from said at least one system load, said monostable circuit when there are one or more additional system loads providing different control signals during said first and second states thereof to control a circuit forming part of each additional system load, said monostable circuit effecting a nonconducting condition of all system loads by said disconnecting of electrical power and by the control signal present during said second state thereof, said timed astable timing circuit drawing no significant current from said battery when in said second state, and said non-latching switch being the only manually actuated switch controlling the application of battery power to said camera.

4,460,265
CAMERA SYSTEM WITH CAMERA MOUNTED DRIVE

Yukio Mashimo, Kanagawa; Tomonori Iwashita; Toshikazu Ichiyanagi, both of Tokyo; Hidehiko Fukahori, Kanagawa; Masahisa Fujino, and Akio Sunouchi, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,261
Claims priority, application Japan, Jun. 11, 1981, 56-90030
Int. Cl.³ G03B *1/18*
U.S. Cl. 354—448 **14 Claims**

5. A camera system, comprising:

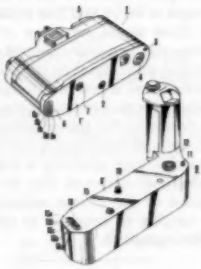
(A) a camera, including:

(a) a release member;

(b) an automatic exposure mechanism to set an aperture opening; and

(c) a rotating coupling member at a bottom plane of the camera, wherein the automatic exposure mechanism effects an aperture opening setting action by a rotation of said rotating coupling member; and

(B) an electric driving device to perform a film wind up action; including:



(a) a second rotating coupling member at a coupling plane of the device with the camera and can be coupled with the rotating coupling member of the camera;

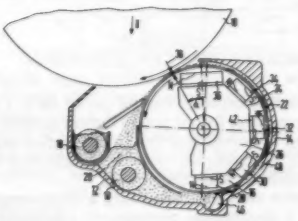
(b) spring means charged by the film wind up action; and

(c) a driving force transmitting member to rotate said second rotating coupling member by a charging force of said spring means, said transmitting means being actuated by an operation of the release member.

4,460,266
DEVELOPING DEVICE FOR DEVELOPING CHARGE IMAGES ON A CHARGE IMAGE CARRIER

Walter Kopp, Taufkirchen, and Karl-Heinz Saalmuller, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 19, 1982, Ser. No. 369,833
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117238
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 DD **10 Claims**



1. Apparatus for use in a developer station housing comprising at least one developer drum, including a rotating hollow cylinder and a stationary permanent magnet arrangement disposed inside said cylinder, for conducting developer mix of toner and carrier particles from a pile disposed on the floor of said housing to an inking gap formed between said cylinder and a charge image carrier passing through said developer station for development of the charge images, said magnet arrangement having a plurality of permanent magnet rows disposed longitudinally with said cylinder on a fixed support and in series relationship about the circumference of said cylinder between a first magnet row disposed adjacent said housing floor and a final magnet row disposed adjacent said inking gap, said final magnet row having its longitudinal centerline offset from the narrowmost point of said inking gap in a direction

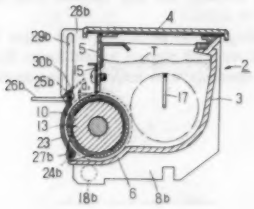
opposite to the rotation direction of said cylinder and being of a width substantially greater than that of any of the remaining said magnet rows, and wherein the furthermost width edge of said final magnet row in the direction of rotation of said cylinder precedes the narrowmost point of said inking gap.

4,460,267

REMOVABLE DEVELOPING DEVICE WITH SHUTTER

Hiroshi Ogawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1983, Ser. No. 505,961
Claims priority, application Japan, Jun. 28, 1982, 57-111074
Int. Cl.³ G03B *15/00*
U.S. Cl. 355—3 DD **7 Claims**



1. A developing device, mountable into an image formation apparatus containing an image bearing member, for developing a latent image on the image bearing member when mounted therein, comprising:

a housing for accommodating developer;

means defining an aperture at a side of said housing adapted to face the image bearing member of the image formation apparatus;

developer carrying means provided within said housing at a position adjacent to the aperture; and

a shutter member for closing and opening the aperture, said shutter member being at a position to open the aperture when said developing device is mounted in place in the image formation apparatus, and being at a position to close the aperture when said developing device is demounted from the image formation apparatus.

4,460,268

AUTOMATIC COMPENSATION FOR CARRIAGE FLYBACK

John A. Forrester, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 27, 1983, Ser. No. 499,048
Int. Cl.³ G03G *15/28*
U.S. Cl. 355—8 **8 Claims**

1. A reproduction machine with a scanning carriage mounted for movement on a support member comprising:

a pneumatic dashpot for the carriage having a tubular member defining a pneumatic chamber vented to atmosphere by a venting aperture,

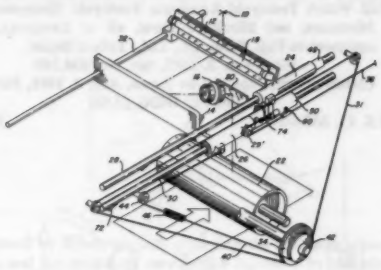
an air bleed screw communicating with the venting aperture for adjusting said venting aperture,

a scan switch mounted on the carriage to provide an end-of-scan position signal and a home position signal,

a controller responsive to the end-of-scan position and home position signals to determine the time period of scan flyback, the controller providing an adjust drive signal in response to the scan flyback time,

an adjustment solenoid with armature, a ratchet wheel secured to one end of the armature, the armature moving the ratchet wheel into engagement with the air bleed screw upon receiving an adjust drive signal from the controller, and

a pawl secured to the carriage for engaging the ratchet wheel upon movement of the carriage whereby in response to the adjust drive signals from the controller, the ratchet wheel in engagement with the air bleed screw is



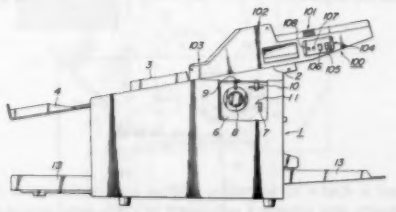
driven by the pawl to adjust the air bleed screw in response to the determined flyback time.

4,460,269

AUTOMATIC DOCUMENT FEEDER FOR USE IN COMBINATION WITH AN ELECTROPHOTOGRAPHIC COPYING MACHINE

Masaru Yamazaki; Kiyoshi Miyashita; Hideyuki Kawazu, and Osamu Ishimoto, all of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,445
Claims priority, application Japan, Mar. 23, 1981, 56-41950; Mar. 23, 1981, 56-41951; Mar. 23, 1981, 56-41952
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 SH **16 Claims**



1. An automatic document feeder for use in a copying machine comprising:

means for holding a stack of documents to be fed one by one into the copying machine;

means for separating a document successively from the stack of documents placed on said holding means and for feeding the separated document into an exposing position of the copying machine;

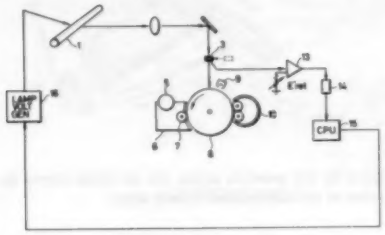
means arranged at a downstream position between said separating and feeding means and the exposing position viewed in a document feed direction for detecting a front edge of a document to produce a front edge signal; and

means having an input terminal for receiving said front edge signal for controlling said separating and feeding means in such a manner that each separated document is once stopped at said position of said front edge detecting means in response to said front edge signal.

4,460,270
AUTOMATIC EXPOSURE CONTROL FOR A PHOTOCOPYING MACHINE

Yuji Watai; Toshiyuki Kitamura; Yoshiyuki Hirayama; Akira Matsuura, and Hirokazu Yasui, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1982, Ser. No. 404,740
Claims priority, application Japan, Aug. 3, 1981, 56/122320
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 E 5 Claims



1. In a photocopying machine in which a light source provides light within an optical path to a photosensitive drum to record an image, the improvement comprising:

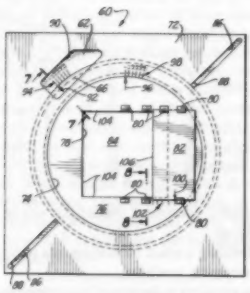
a light sensor which during a sampling period is inserted into said optical path and senses the intensity of said light in said optical path and produces an output, said light sensor being removed from said optical path after the sampling period, said sampling period recurring periodically; and

control means for varying the intensity of said light source as a function of said output signal and maintaining said intensity until the next sampling period.

4,460,271
CROPPING DEVICE

William Lymperis, 400 N. Acacia, Apt. B-10, Fullerton, Calif. 92631

Filed Mar. 15, 1982, Ser. No. 358,368
Int. Cl.[3] G03B *27/58*
U.S. Cl. 355—74 2 Claims



1. A device for cropping photographs having upper and lower frames which are movable with respect to one another, each of said frames having two edges located at a right angle to one another, said frames being located one above another so that said edges on said frames define a rectilinear opening, said frames being movable relative to one another so that the size of said opening can be varied in which an improvement comprises:

said lower frame including a flat, rotatably mounted member,

said upper frame including a corresponding flat, rotatably mounted member located above said member on said lower frame and capable of being rotated about the same axis as said member of said lower frame,

said rotatable members each including rectilinear openings formed therein, said rectilinear openings capable of being aligned with one another by the rotation of one of said rotatable members,

said upper frame also including a slide capable of being moved so as to mask a part of said opening in said rotatable member on said upper frame so as to change the ratio between the lengths of the sides of said opening,

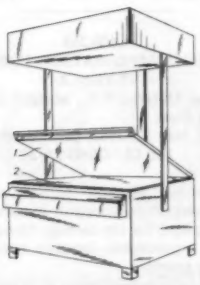
cooperating means on said frames permitting said frames to be moved to change both the ratio of the lengths of the sides of said opening and the dimensions of said opening when said opening has any specific ratio between the lengths of its sides,

said cooperating means permitting said upper frame to be linearly moved with respect to said lower frame so as to offset said openings with respect to one another.

4,460,272
PRINTING MACHINES USED IN PHOTOLITHOGRAPHY, REPRO WORK, SCREEN PRINTING, AND BROMOGRAPHY

Carlo G. Parrini, Segrate, Italy, assignor to Repro Master Electronic S.r.L., Milan, Italy

Filed May 13, 1982, Ser. No. 377,605
Claims priority, application Italy, Jun. 3, 1981, 21966/81[U]
Int. Cl.[3] G03B *27/20*
U.S. Cl. 355—91 2 Claims

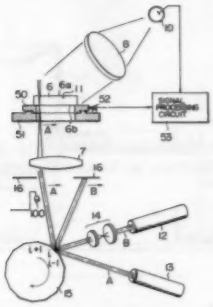


1. An improvement in printing machines used in photolithography, repro work, screen printing, and bromography having a glass plate and a vacuum table between which, for example, a film containing the drawing to be reproduced and the plate to be engraved are laid, after which the air between the superimposed plates is sucked out by means of a vacuum pump, in which the glass plate is treated to allow perfect evacuation of air from the adhering surfaces of the glass plate and the underlying film, characterized by the fact that said treatment is consisting of a finely grained rough surface extending over the entire underside of the glass plate, so that the surfaces of the glass plate and film can perfectly adhere with one another over their entire extensions.

4,460,273
TEST APPARATUS FOR DEFECTS OF PLATE

Mitsuyoshi Koizumi; Nobuyuki Akiyama, and Yoshimasa Ohshima, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 7, 1981, Ser. No. 309,485
Claims priority, application Japan, Oct. 9, 1980, 55-140609
Int. Cl.³ G01N 21/88
U.S. Cl. 356—237 15 Claims



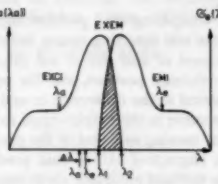
1. A test apparatus for defects on a plate comprising:
first surface irradiation means for irradiating and focusing a first illumination light to one surface of said plate;
second surface irradiation means for irradiating and focusing a second illumination light to the other surface of said plate;
scan means for scanning said one and the other surfaces of said plate by said first and second illumination lights;
detection means for detecting scattered lights from said surfaces of said plate;
a binary circuit for determining if a detection signal from said detection means exceeds a predetermined threshold;
a plurality of two-dimensional frame setting means one for each of said first and second surface irradiation means for producing a gate signal of a predetermined width including an initial position on a scan line scanned by said scan means when said detection signal exceeds said threshold at said initial position and continuously producing said gate signal until said detection signal no longer exceeds said predetermined threshold within said width of said gate signal on the succeeding scan lines; and
means for determining the numbers of the defects on said one surface and said other surface of said plate by the numbers of the two-dimensional frames set by said plurality of two-dimensional frame setting means.

4,460,274
PROCESS FOR THE LUMINESCENSE-SPECTROSCOPIC EXAMINATION OF COATINGS AND COATING PROFILES

Hans-Joachim Schumann, Cologne, and Manfred Faust, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 9, 1981, Ser. No. 310,140
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1980, 3038908
Int. Cl.³ G01N 21/64
U.S. Cl. 356—318 7 Claims

1. A process for the luminescence-spectroscopic examination of coatings and coating profiles of solid and liquid layers and layer assemblages, whereby the luminescent substances present in the layer and layer assemblages, such as spectral sensitisers, optical lighteners, dyes and auxiliaries, are probed and determined through emission product spectra in incident and/or transmitted light by a photon detector using an emission spectroscopic process, characterised in that the different luminescent substances in the layers and layer assemblages are photosensitively determined alongside one another in a single

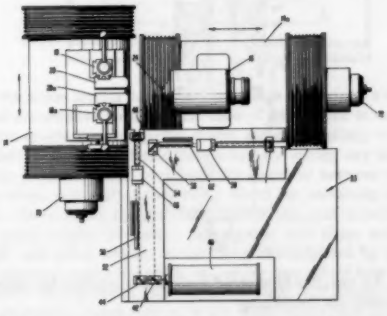


measurement by synchronously changing the emission wavelength λ_e and the excitation wavelength λ_a, offset by the substance related free choice of the wavelength difference $\Delta\lambda$, through the wavelengths λ and measuring the emission.

4,460,275
METHOD AND APPARATUS ADAPTED FOR AUTOMATIC OR SEMI-AUTOMATIC FABRICATION OF ULTRA-PRECISION OPTHALMIC LENSES, E.G., CONTACT LENSES

Robert G. Spriggs, St. Petersburg, Fla., assignor to Automated Optics, Inc., Clearwater, Fla.

Continuation of Ser. No. 092,840, Nov. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 928,973, Jul. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 821,162, Aug. 2, 1977, abandoned. This application Jul. 1, 1982, Ser. No. 394,149
Int. Cl.³ G01B 9/02
U.S. Cl. 356—358 4 Claims



1. In a microinch lens surface generator in which a lens surface is generated solely by translating a rotating lens precursor along a first axis while independently translating a cutting tool along a second, orthogonal axis during engagement with the rotating precursor, said first and second axes being located in a plane that is parallel to the rotational axis of the precursor, apparatus for controlling movement of the precursor relative to the tool along their respective axes to thereby generate the lens surface, comprising:
means for generating a signal indicative of a predetermined position at which one of the precursor and the tool should be located;
means for generating a beam of coherent light;
an interferometer for receiving said beam of light and splitting it into two beams;
means for receiving one of said beams from said interferometer and reflecting it back to said interferometer where it is combined with the other of said beams to produce an interference pattern, said receiving means being movable along one of said axes in accordance with the movement

of said one of the precursor and the tool, to change the length of the path along which said one beam travels;

means for detecting changes in the interference pattern to thereby detect movement of said one of the precursor and the tool;

means for comparing said position signal with an output signal from said detecting means, indicative of the amount of movement of said one of the precursor and the tool from a reference position, and for producing an output signal related to the difference in said two signals; and

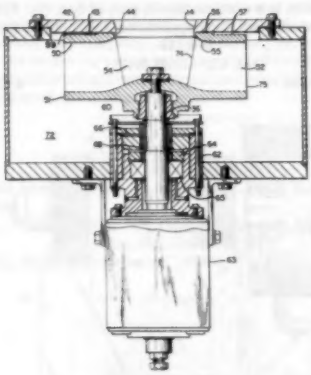
means responsive to the output signal from said comparator means for moving said one of the precursor and the tool along its respective axis to said predetermined position while the tool and precursor are in engagement to thereby generate the lens surface.

4,460,276

OPEN INLET BLENDER

Jorge O. Arribau, Englewood; Russell J. Dorn, Aurora, and Michael G. Dubic, Littleton, all of Colo., assignors to Geo Condor, Inc., Henderson, Colo.

Filed Aug. 16, 1982, Ser. No. 408,075
Int. Cl.³ B28C *5/13, 5/16, 7/00*
U.S. Cl. 366—13 **16 Claims**



1. An impeller-type blender apparatus adapted for intermixing materials comprising:

a generally cylindrical casing bounded by a bottom wall and a top wall, said top wall provided with a central opening therein defining a top inlet;

an impeller mounted for rotation in said casing in coaxial alignment with said central opening, said impeller having upper and lower support plates and impeller vanes extending radially of and mounted between said support plates with a central opening aligned in open communication with and directly beneath said top inlet, said impeller having dynamic sealing means defined by a raised surface portion on said upper plate disposed in substantially flush abutting relation to said top wall to prevent backflow of intermixed materials in said casing through said top inlet without entrapping air in said blender;

inlet and outlet ports disposed in said casing radially outwardly of said impeller; and

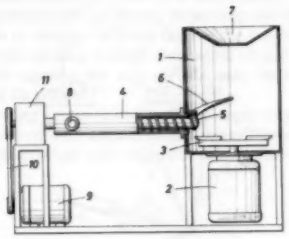
pumping means for pumping fluids into said inlet port for intermixing with materials introduced through said top inlet into the center of said impeller and directed radially outwardly by said impeller vanes.

4,460,277

APPARATUS FOR PROCESSING SYNTHETIC THERMOPLASTIC MATERIAL

Helmuth Schulz, St. Florian, and Helmut Bacher, Linz, both of Austria, assignors to Oesterreichische Schiffswerften Aktiengesellschaft, Linz, Austria

Continuation of Ser. No. 284,056, Jul. 16, 1981, abandoned. This application Sep. 12, 1983, Ser. No. 531,199
Claims priority, application Austria, Jul. 31, 1980, 3961/80
Int. Cl.³ B29B *1/10, 1/12*
U.S. Cl. 366—76 **1 Claim**



1. In apparatus for processing synthetic thermoplastic material, which comprises an upright receiver having a vertical axis, a shell surrounding the axis and defining an opening, a bottom wall and an upper end opposite the bottom wall, the upper end being adapted to receive the synthetic thermoplastic material, a disintegrating and mixing tool disposed in the receiver near the bottom wall thereof and mounted for rotation in a horizontal plane about the vertical axis, and drive means for rotating the tool in an operating direction:

the improvement of a screw extruder extending substantially radially with respect to the vertical axis outside of the receiver shell and having an intake end, only the intake end protruding through the opening into the receiver and the intake end extending in a plane above the plane of the disintegrating and mixing tool, and

a baffle having a lower end portion disposed close to the intake end of the screw extruder for guiding the material thereto, the baffle being disposed in the receiver adjoining the shell and sloping in said direction towards the intake end of the screw extruder.

4,460,278

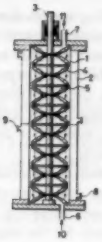
CONTINUOUS BULK POLYMERIZATION REACTOR

Tetsuyuki Matsubara; Norifumi Ito; Yuzuru Ishida; Mune Iwamoto, all of Yokohama, and Tetsuo Maeda, Yachiyo, all of Japan, assignors to Toyo Engineering Corporation and Mitsui Toatsu Chemicals, Incorporated, both of Tokyo, Japan

Filed Jan. 7, 1982, Ser. No. 337,765
Claims priority, application Japan, Jan. 28, 1981, 56-10162
Int. Cl.³ B01F *15/06*
U.S. Cl. 366—149 **7 Claims**

1. A continuous bulk polymerization reactor comprising a cylindrical reaction vessel having a fluid inlet and a fluid outlet; and the reactor vessel being elongated in a flow direction of reacting fluid; a shaft installed within said reaction vessel; a plurality of double helical-ribbon agitators attached to said shaft; each of said double helical-ribbon agitators being formed of elongated material and having two free ends; each of said double helical-ribbon agitators being attached at a generally central location to said shaft; at least 80% of said double helical-ribbon agitators facing in the same helical direction about said shaft and advancing in a parallel direction to said shaft; each of said double helical-ribbon agitators being connected in pairs on said shaft spaced apart from one another by about 180 degrees; and baffles being disposed between adjacent pairs of said double helical-ribbon agitators, said baffles having a relative open area of 5 to 40% based on the cross-sectional area of

the internal space of said reaction vessel whereby the reacting flow is directed from the tips of the helical-ribbon agitators



along the inner wall of the reaction vessel in the direction opposite to the overall flow of the reacting fluid therein.

4,460,279

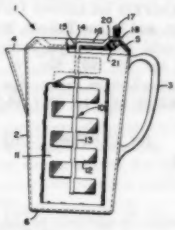
LIQUID PITCHER WITH MIXER

Robert L. Krasney, 737 N. Kilkea Dr., Los Angeles, Calif. 90046

Filed Aug. 25, 1982, Ser. No. 411,412

Int. Cl.³ B01F 7/22

U.S. Cl. 366—247 **14 Claims**



1. A stirrer assembly for a pitcher, comprising mixing means for mixing fluid-like material in such pitcher, mounting means for mounting said mixing means, positioning means for positioning said mixing means and mounting means in position in such pitcher for mixing material therein, handle means for turning said mixing means and mounting means, support means for supporting said handle means at a position thereof removed from a coupling area of said handle means and said mounting means during application of force thereto to effect such turning, and a cover for such pitcher, said support means comprising an annular guide having a guide surface, said handle means having a follower surface positioned to follow said guide surface, said follower surface and guide surface being coplanar, located proximate each other, intended for engagement, and forming an obtuse angle with respect to the major planar extent of said cover and an acute angle with respect to the major axial wall direction of such pitcher, said guide surface and follower surface being cooperative to transmit externally applied vertical force from said handle means to such container wall and to restrict radial movement of said handle means during turning thereof about said guide.

4,460,280

ALARM SETTING DEVICE FOR TIMEPIECES

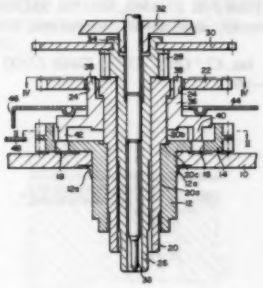
Sano Tomonori, Saitama, Japan, assignor to Rhythm Watch Co., Ltd., Tokyo, Japan

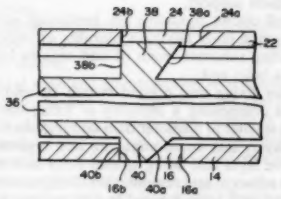
Filed May 10, 1983, Ser. No. 493,299

Claims priority, application Japan, May 14, 1982, 57-70857[U]

Int. Cl.³ G04B 23/02

U.S. Cl. 368—74 **3 Claims**





1. An alarm setting device for timepieces comprising a time wheel cooperative with the gear train of a timepiece to rotate by one revolution for twelve hours, an alarm setting wheel coaxially disposed with said time wheel for setting any alarm setting time, an alarm cam coaxially disposed between said time wheel and said alarm setting wheel for permitting said alarm cam to rotate about and slide on the axis, and an activating spring urging said alarm cam against said alarm setting wheel, said alarm setting device being characterised by time cam aperture means formed in one of the time wheel face and the alarm setting wheel face opposed to said time wheel, time can projection means formed in the other wheel face for engaging with said time cam aperture means at all times, said time cam projection means including a sloping surface formed therein at one end, said sloping surface making an acute angle with the plane including said alarm cam and being adapted to engage with said time cam aperture means at one end when said time wheel is rotated in the reverse direction, alarm cam aperture formed in one of the alarm setting wheel face and the alarm cam face opposed to said alarm setting wheel, and alarm cam pawl means formed in the other of the alarm setting wheel face and the alarm cam face opposed to said alarm setting wheel for engaging with said alarm cam aperture means, said alarm cam pawl including a sloping surface formed therein at one end which is adapted to engage with said alarm cam aperture means at one end when said alarm cam is rotated in the forward direction, and wherein the sloping surface of said time cam projection means engages with the end of said time cam aperture means to move said alarm cam axially to disengage said alarm cam pawl means from said alarm cam aperture means when said time wheel or alarm setting wheel is rotated in the reverse direction, whereby said time wheel or alarm

setting wheel can be rotated both in the forward and reverse directions without any obstruction.

4,460,281
MOUNTING ARRANGEMENT FOR PRINTED CIRCUITS IN ELECTRONIC WATCHES

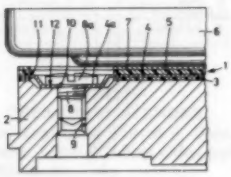
André Othenin-Girard, Dombresson, Switzerland, assignor to Fabriques d'Horlogerie de Fontainemelon S.A., Fontainemelon, Switzerland

Filed Feb. 26, 1982, Ser. No. 352,974

Claims priority, application Switzerland, Feb. 26, 1981, 1318/81

Int. Cl.³ G04C *23/02*; G04B *37/00*

U.S. Cl. 368—88 **8 Claims**



1. An electronic timepiece, comprising:

a movement support;

a printed circuit including an insulating substrate and a conductive layer having a plurality of regions devoid of insulating substrate, each of said regions being provided with a hole; and

means for fixing said printed circuit on said support, said means comprising a plurality of fixing members having heads smaller in diameter than said regions of said conductive layer, said heads engaging said regions of said conductive layer and being spaced from said insulating substrate adjacent said regions, said fixing members extending through said holes formed in said regions, and said fixing members being screwed into said support for gripping said regions of said conductive layer between said heads of said fixing members and said support without gripping said insulating substrate.

4,460,282
TIMEPIECE STEPPING MOTOR DRIVE CIRCUIT WITH STEPPING FAILURE COMPENSATION

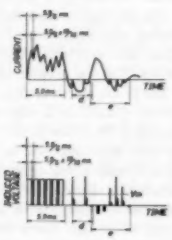
Fumio Kanno, Sayama, Japan, assignor to Citizen Watch Co., Tokyo, Japan

Filed Apr. 30, 1981, Ser. No. 259,156

Claims priority, application Japan, May 13, 1980, 55/63100

Int. Cl.³ G04F *5/00*

U.S. Cl. 368—157 **7 Claims**



1. An electronic timepiece comprising:

a stepping motor including a rotor for driving hands of the timepiece and an electromagnetic coil;

driving pulse generating means and compensation pulse generating means for generating signals for driving said stepping motor;

driving energy control means for controlling energy of said driving signals;

induced voltage detecting means for detecting voltage induced in said electromagnetic coil of the stepping motor and generating a detection signal representative thereof;

means for determining failure of stepping of the rotor of the stepping motor from the detection signal from said induced voltage detecting means; and

a detection controlling means for activating said induced voltage detecting means;

wherein said stepping failure determination means detects stepping rotor failure and controls said compensation pulse generating means to supply a compensation pulse to said rotor to compensate for the stepping rotor failure and to said driving energy control means to increase the energy of the driving pulse to compensate for increase in a load on the timepiece;

said detection controlling means monitoring the detection signal produced by said induced voltage detection means during at least two independent detection periods, said stepping failure determination means including a plurality of stepping failure determination elements provided in correspondence with said detection periods respectively wherein said compensation pulse generating means supplies a compensation pulse when at least one of said stepping failure determination elements detects the failure of stepping of the rotor.

at least one of said stepping failure determination elements detecting stepping failure when the detection signal exceeds a predetermined reference level while another of said stepping failure determination elements detects stepping failure when the detection signal does not exceed a predetermined reference level.

4,460,283
DAMPED BEARING DEVICE

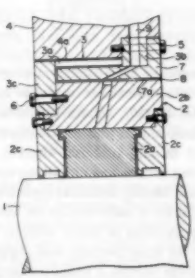
Masahiro Yoshioka, and Kazuo Takeda, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1982, Ser. No. 371,570

Claims priority, application Japan, Apr. 30, 1981, 56-63958; Apr. 30, 1981, 56-63959; May 13, 1981, 56-70751; May 18, 1981, 56-73549

Int. Cl.³ F16C *27/02*

U.S. Cl. 384—119 **6 Claims**



1. A damped bearing device including a bearing means for journalling a rotary shaft, a spring body means for resiliently supporting said bearing means with respect to a housing, and a damper portion in the form of a squeeze film formed between said bearing means and said housing, characterized in that said spring body means comprises a housing-side flange secured to said housing, a bearing-side flange secured to said bearing means, spring means interposed between said two flanges and

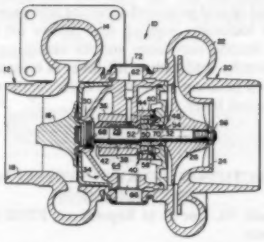
arranged in a plurality of layers, each of said layers including a plurality of rib means extending in an axial of said rotary shaft and circumferentially spaced from each other about an outer periphery of said bearing means, and intermediate flange means for connecting alternate ends of said rib means of said plurality of layers of said spring means together.

4,460,284

TURBOCHARGER ASSEMBLY INCLUDING A FLEXIBLE ANTI-FRICTION BEARING SUPPORT

Jerre F. Lauterbach, and Hans J. Schlamadinger, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 31, 1981, Ser. No. 337,088
Int. Cl.³ F16C *21/00*; F01D *25/16*
U.S. Cl. 384—126 **7 Claims**



1. A hybrid bearing assembly for supporting a high speed shaft on a base through an anti-friction bearing having an inner race and an outer race separated by anti-frictional elements having a predetermined working clearance and having an exterior dimension which is within a known manufacturing tolerance, comprising

(a) a stationary support adapted to be rigidly connected with the base,

(b) a floating bearing support hydrodynamically supported within said stationary support for limited rotational movement due to differences in the geometric and mass centers of rotation of the shaft and being formed of material having a thermal coefficient of expansion which is greater than the thermal coefficient of expansion of the outer race, said floating bearing support including:

(1) a hydrodynamic sleeve bearing for supporting one end of the shaft structure for rotation within said stationary bearing support,

(2) a planar wall and a plurality of segments mounted in cantilevered fashion to said planar wall, said segments having inside arcuate surfaces defining an interior cavity shaped to form an interference fit with the exterior of the outer race within a predetermined manufacturing tolerance, and

(3) expansion control means surrounding said interior cavity, including a planar wall and a plurality of segments mounted in cantilevered fashion to said planar wall, said segments having inside arcuate surfaces which define said interior cavity, for causing the surface of said interior cavity to grip radially the outer race with a sufficient frictional force to prevent relative rotational movement between said floating bearing support and the outer race throughout an operating temperature range spanning an excess of 400° F. without imposing on the outer race a radial compressive force sufficient to eliminate the predetermined working clearance between the inner and outer races, said expansion control means being formed in said floating bearing support between a pair of opposed parallel exterior surfaces and by four elongated slots separating said segments, said slots being parallel to the longitudinal axis of said interior cavity and being arranged generally perpendicularly to said exterior surfaces, respectively; and

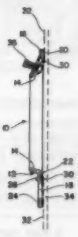
(c) retention means for preventing relative axial movement of the outer race and said bearing support.

4,460,285

FLANGED BEARING MOUNT

John F. O'Donnell, Peoria, Ill., assignor to Development Engineering and Associates, Peoria, Ill.

Filed Oct. 18, 1982, Ser. No. 433,150
Int. Cl.³ F16C *23/04, 33/74, 35/02*
U.S. Cl. 384—152 **1 Claim**



1. A flanged mounting member for an antifriction bearing or the like, comprising:

an annular member the internal face of which conforms to at least a portion of the external face of a bearing assembly to be mounted therein,

a flange integral with and encompassing said annular member, said flange having two opposed faces one of which conforms to a support surface upon which it is to be mounted, said one face and said internal face being contiguous and together defining a continuous interior surface of the flanged mounting member,

an annular groove on said one face of said flange and positioned substantially concentrically with respect to said annular member, said groove being adapted to be filled with a flexible material for sealing said flange to such support surface against the passage of dirt therebetween,

an annular upstanding ring on the other of said two opposed faces of said flange, said upstanding ring being in registry with said annular groove and resulting from the formation of said groove, whereby the displacement of material occasioned by the concomitant formation of said groove and said ring serves to mechanically strengthen said flange,

a lubricant fitting communicating with said interior surface, whereby lubricant may be forced through said fitting into the interior of said mounting member for application to a bearing assembly therein, and

at least one groove communicating with said annular groove and extending inwardly therefrom on said one face, whereby flow of lubricant to said annular groove may be facilitated.

4,460,286

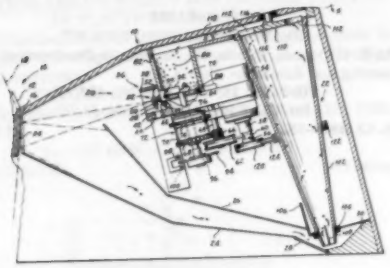
CENTRIFUGAL BALL ELEVATOR FOR MICROBALLISTIC PRINTER

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Stamford, Conn.

Division of Ser. No. 239,891, Mar. 3, 1981, Pat. No. 4,351,617, which is a continuation of Ser. No. 39,372, May 15, 1979, abandoned. This application Jun. 9, 1982, Ser. No. 386,619
Int. Cl.³ B41J *3/02*
U.S. Cl. 400—118 **8 Claims**

1. Apparatus for transporting solid objects including in combination a hollow rotary member having an inlet and an outlet and having means forming an internal surface of revolu-

tion extending between said inlet and said outlet, said internal surface having a radius that increases monotonically from said inlet to said outlet, means for supplying said objects to said surface through said inlet, and means for rotating said member



to impel said objects along said surface toward said outlet under the action of centrifugal force, said surface-forming means including means for cleaning the contacting portions of said objects as they move along said surface.

4,460,287

RIBBON LIFT MECHANISM FOR TYPEWRITERS AND THE LIKE MACHINES

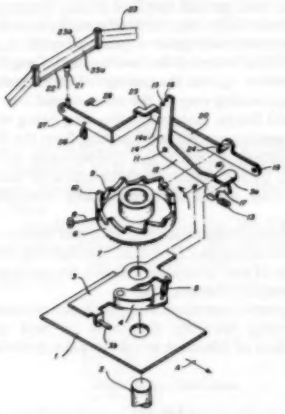
Rolf Theilen, Furth, and Manfred Kleinhanns, Feucht, both of Fed. Rep. of Germany, assignors to Triumph-Adler A.G. fur Buro- und Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed Mar. 16, 1983, Ser. No. 475,901

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 3210723

Int. Cl.³ B41J *35/10*

U.S. Cl. 400—213.1 **4 Claims**



1. A typewriter having a ribbon lift mechanism for alternatingly lifting a ribbon from a lowered position to first and second elevations relative to a printing line comprising a support frame,

a shaft supported on said frame,

a powered lever rotatably mounted on said shaft for cyclic movement from a rest position to an active position and return to rest position to effect ribbon lift,

a lift control wheel rotatably mounted on said shaft, said lift control wheel having a cam ring and a ratchet wheel,

said lever including a pawl for engaging and indexing said ratchet wheel incident to cyclic movement of said lever,

said cam ring having alternating low and high lift cams separated by valleys,

a ribbon supporting lift lever pivotally mounted on said frame and biased to its lowered position,

a cam follower directly mounted on said ribbon lift lever engaging said cam ring for alternatingly lifting said ribbon lift lever from a lowered position to first and second elevations incident to indexing of said control wheel by said pawl,

a locking lever pivotally mounted on said frame,

a spring normally biasing said locking lever toward locking engagement with said ribbon lift lever for holding it in said first and second elevated positions, said locking lever having an inclined edge, and

an arm on said powered lever overlying said inclined edge of said locking lever for normally holding said locking lever against the bias of its spring out of locking engagement with said ribbon lift lever and movable incident to cyclic movement of said powered lever for releasing said locking lever for lockingly holding said ribbon lift lever at said first and second elevations and for returning said locking lever whereby said ribbon lift lever is released for return to lowered position incident to each cyclic movement of said powered lever.

4,460,288

MULTIDIRECTIONAL LINKING SYSTEM FOR USE IN CONSTRUCTIONS

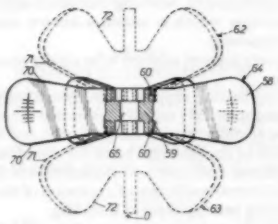
Alfred J. Schaff, 94, Rue de la République, 57300 Marange-Silvange, France

Filed Feb. 4, 1981, Ser. No. 231,356

Claims priority, application France, Feb. 6, 1980, 80 02591

Int. Cl.³ E04C *3/04*

U.S. Cl. 403—27 **7 Claims**



1. A connector for interconnecting a plurality of rods into a spatial structure wherein each of said rods comprises a longitudinal axis, and wherein said connector comprises:

a first central body member having a first longitudinal axis;

a plurality of first lug members projecting radially outwardly from and spaced around said first central body member, each of said first lug members having a central axis directed transverse to and intersecting said longitudinal axis of said first central body member at a predetermined common point;

a second central body member having a second longitudinal axis coaxial with said longitudinal axis of said first central body member and secured to said first central body member;

a plurality of second lug members projecting radially outwardly from and spaced around said second central body portion, each of said second lug members having a central axis directed transverse to and intersecting said second longitudinal axis at said common point;

keying means for detachably connecting and for angularly positioning said first central body member with said second central body member; and

marking means indicating a plurality of alignment marks corresponding to a plurality of different points of attachment of said rods with said connector provided on each of

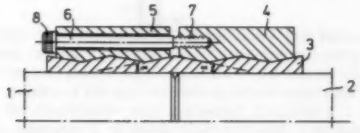
said first and second lug members for substantially aligning said longitudinal axes of said rods with said central axes of said first and second lug members within predetermined marked limits, each one of said plurality of alignment marks defining a predetermined angular position formed between said longitudinal axis of each one of said rods and said central axes of said first and second lug members such that interconnection of said rods with said connector via said first and second lug members at any said predetermined angular position transmits and converges forces from said rods to said connector at said common point.

4,460,289

CLAMP COUPLING

Bengt Lundgren, Lerum, Sweden, assignor to SKF Nova AB, Gothenberg, Sweden

Filed Jul. 15, 1931, Ser. No. 283,486
Claims priority, application Sweden, Sep. 19, 1980, 8006581
Int. Cl.³ F16B 2/02
U.S. Cl. 403—314 **5 Claims**



2. A device for coupling two shaft members having end portions comprising

a sleeve having an inner surface directed towards the peripheral surface of the end portions with at least one thread having angularly disposed flanks and an outer surface remote from the members,

the profile of each flank of said sleeve thread defining equal angles relative to the axis of said sleeve in longitudinal section and are disposed at a small angle relative to the axis,

at least one annular member overlying said shaft members and having at least one thread having angularly disposed flanks which complement and cooperate with said sleeve thread flanks and means for axially displacing said annular member relative to said sleeve without rotating relative thereto whereby the thread flanks on said member slide on the thread flanks of said sleeve to cause a wedging action against said shaft members and produce a coupling effect.

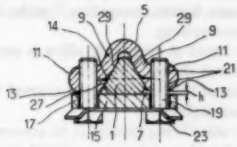
4,460,290

ASSEMBLY COMPRISING A COUPLING ELEMENT HAVING A REINFORCED HUB

Bernard Mallet, Limay, France, assignor to Nadella, Rueil Malmaison, France

Continuation of Ser. No. 248,225, Mar. 27, 1981. This application Oct. 18, 1983, Ser. No. 543,214
Claims priority, application France, Mar. 28, 1980, 80 07026
Int. Cl.³ F16B 2/02
U.S. Cl. 403—373 **12 Claims**

1. An assembly comprising a torque-transmitting element and a coupling element which is of sheet metal and comprises a hub of generally U or V-shape symmetrical cross section with two side walls and a connecting portion defining an axially extending slot having an entrance of a width sufficient to permit assembly with said torque-transmitting element by relative radial displacement of the torque transmitting element and the hub, said two side walls having inner surfaces engaging complemental surfaces of said torque-transmitting element, ears extending outwardly from said side walls substantially perpendicularly to an axial plane of symmetry of the hub, each of said ears comprising a first portion formed of an outwardly bent portion of the respective side wall and a second portion bent back inwardly tight against said first portion in full facial contact therewith to form a double thickness ear, said second portion having an inner edge which constitutes a continuation of the inner surface of the respective side wall and engages said torque-transmitting element, a cooperating member overlying



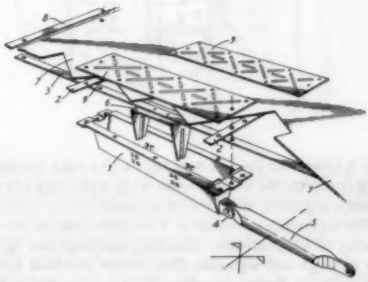
and extending across between said ears and engaging a complemental surface of said torque-transmitting element to secure it in said slot, and connecting means in aligned holes in said ears and overlying side portions of said cooperating member for connecting said cooperating member to said ears and thereby clamping said torque-transmitting element tightly in said slot.

4,460,291

TRACK FOR SOFT GROUND

André Lamendour, Le Passage, 29213 Plougastel Daoulas, France

Filed Nov. 2, 1981, Ser. No. 317,657
Claims priority, application France, Oct. 22, 1980, 80 22542
Int. Cl.³ E01C 5/16, 9/08
U.S. Cl. 404—35 **12 Claims**



1. A track for use on soft ground comprising at least two sidewardly arranged rows of metal rib members disposed at regular intervals along the track, said rib members projecting from the underside of the track, said rib members being sheet metal pressings in the form of a V-sectioned trough, flanges surrounding the rib members, longitudinal and transverse ties secured to the rib members to maintain the rib members in their predetermined relative positions, individual track plates overlying and secured to the individual rib members, and a flexible covering sheet of plastics material fastened to the rib members, said covering sheet and said longitudinal and transverse ties being sandwiched between the track plates and said flanges surrounding the rib members.

4,460,292

PROCESS FOR CONTAINMENT OF LIQUIDS AS SOLIDS OR SEMISOLIDS

Robert L. Durham; Carl R. Henderson, both of Houston, and Richard C. Allison, II, LaPorte, all of Tex., assignors to Agritec, Inc., Houston, Tex.

Filed Jul. 15, 1982, Ser. No. 398,503
Int. Cl.³ C02C 1/68; E21B 21/06
U.S. Cl. 405—129 28 Claims

1. A method of containing a liquid selected from the group consisting of waste liquids, hazardous liquids, drilling muds, and chemicals, comprising,

absorbing the liquid in biogenetic silica in amorphous state having a porous skeletal structure,

a major portion of the liquid being contained in void spaces of the porous skeleton,

the biogenetic silica being present in an amount sufficient to contain the liquid in at least a semisolid mass.

13. A method of containing mud or sludge in a pit comprising,

adding biogenetic silica in amorphous state and having a porous skeleton to the mud or sludge in the pit effective to contain a major portion of the mud or sludge in void spaces of the porous skeleton,

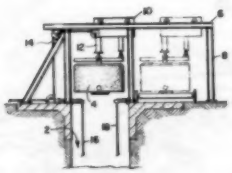
the biogenetic silica being present in an amount to contain the liquid in at least a semisolid condition.

4,460,293

MINE SHAFT LINER

Paul Richardson, Santa Ana, and David A. Whitley, Brea, both of Calif., assignors to Santa Fe International Corporation, Orange, Calif.

Filed Jul. 3, 1980, Ser. No. 165,384
Int. Cl.³ E21D 5/01
U.S. Cl. 405—133 30 Claims



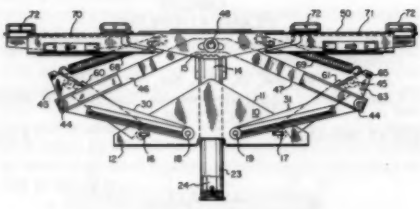
14. A system for lining a bore hole with a stack of cylindrical lining segments, the system comprising: a plurality of cylindrical lining segments, each of said segments having a plurality of radially extending openings at a location near its base and a plurality of longitudinally extending openings that form conduits through said segments; fluid means provided within the hole during a lining operation for partially supporting the weight of each of said segments as it is lowered into the hole; and, a transporting mechanism having a plurality of retractable engagement arms radially extending into said radially extending openings during lowering of segments down into said hole one at a time from a location adjacent to the hole and lowering such said segment into said hole and said transporting mechanism acting to support a substantial portion of the weight of each of said segments as it is lowered into the hole until said segment reaches the bottom of the hole or the top of the stack of said segments already formed in the hole, and said transporting mechanism having means for causing said arms to be retracted from the openings in the segment in response to the transfer of the weight of said segment to the stack or the bottom of the hole.

4,460,294

TOGGLE TYPE TEMPORARY ROOF SUPPORT FOR MINING MACHINERY

William R. Cobb, Murrysville, and Dennis J. Wehner, Baden, both of Pa., assignors to Schroeder Brothers Corporation, McKees Rocks, Pa.

Filed Dec. 7, 1981, Ser. No. 327,819
Int. Cl.³ B60P 1/48; B66F 3/00; E04G 25/00; E21D 15/44
U.S. Cl. 405—290 4 Claims



1. A temporary roof support for use with mining machines comprising:

a base structure (10) having a generally vertical axis, said base structure having four pivot pins fixed thereto comprising an inside pair symmetrically spaced on each side of said axis defining inside right (19) and inside left (18) pivot pins and an outside pair of pivot pins symmetrically spaced on each side of said axis defining outside right (17) and outside left (16) pivot pins;

two pairs of swing arms defining a left swing arm pair (30) and a right swing arm pair (31), each swing arm having inner and outer ends, each swing arm having means for pivotal connection at each end, a line joining the said pivotal connection means at each end of each swing arm defining the axis of the swing arm, and said right pair of swing arms (31) being pivotally connected to said right inside pivot pin (19) at the inner end of said swing arms and said left pair of swing arms (30) being pivotally connected to said left inside pivot pin (18) at the inner end of said swing arms;

left (46) and right (47) linkage extensions having inner and outer ends, said extensions being pivotally connected (48) to each other at their inner ends and being pivotally connected at their outer ends to the outer ends of the left and right swing arm pairs respectively;

left and right extensible hydraulic means (60, 61) having inner and outer ends, each extensible means having means for pivotal connection at each end, a line joining said pivotal connection means at each end of each extensible means defining the axis of the extensible means, said right extensible means (61) being pivotally connected at its inner end to said right outside pivot pin on said base structure and connected at its outer end to the right swing arm pair such that the axes of the right extensible hydraulic means and the right swing arms are always crossed; said left extensible means (60) being pivotally connected at its inner end to said left outside pivot pin on said base structure and connected at its outer end to the right swing arm pair such that the axes of the left extensible hydraulic means and the left swing arms are always crossed; and

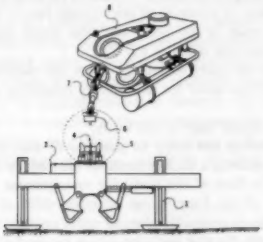
a beam attached to the pivotal joint (48) between the left and right linkage extensions for supporting the roof.

4,460,295

SUBMERSIBLE CONNECTOR

Jean-Louis Migliarese-Caputi, Paris; Michel P. Baylot, and Jacques G. Merle, both of Marseilles, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Feb. 22, 1982, Ser. No. 350,908
Claims priority, application France, Feb. 25, 1981, 81 03717
Int. Cl.[3] B63C *11/00*
U.S. Cl. 405—303 5 Claims



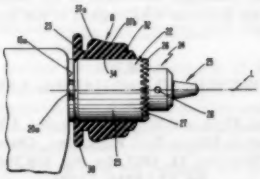
1. A take over connector for establishing a link between a submerged tool having energy distributors for activating elements of the tool and a control appliance which can be brought into the vicinity of the tool and which carries means for controlling the distributors, said connector comprising a first, receiving connector part mounted on said tool, a second, active connector part carried by said control appliance, mechanical actuators provided externally on said first connector part for operating the distributors, and mechanical control members provided externally on said second connector part, operatively engaging said mechanical actuators when said second connector part is brought onto said first connector part, and being acted on by said mechanical actuators.

4,460,296

KEYLESS CHUCK GRIPPING DEVICE

Wilford E. Sivertson, Jr., 205 Dogwood Ct., Yorktown, Va. 23692

Filed Jun. 4, 1981, Ser. No. 270,246
Int. Cl.[3] F04D *25/02*
U.S. Cl. 408—124 13 Claims



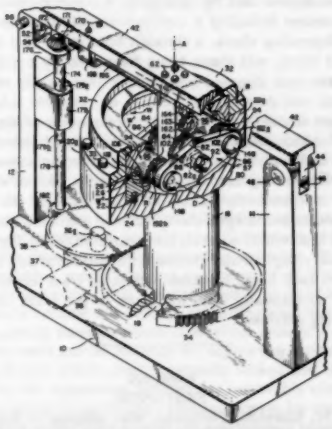
1. In combination, a reversible power tool, said power tool including a rotary drive shaft and a chuck, the chuck including a locking drum and jaws for holding implements in place, the jaws being drivingly coupled to the shaft and coupled to the locking drum so the locking drum can be turned in first and second directions relative to the jaws to cause the jaws to open and close to enable insertion and removal of implements in the jaws, a structure for enabling the chuck to be opened and closed so that implements can be secured to and removed from the chuck by manually holding the chuck without using a key, the power tool including a housing having a wall through which the drive shaft extends, a motor for driving the drive shaft being located in the housing, the structure comprising an anchor sleeve having an inner diameter, a multiplicity of hand gripping projections fixedly mounted on the sleeve so that they are circumferentially spaced from each other about the periphery of the sleeve and extend radially away from the sleeve for enabling safe and comfortable hand gripping thereof to hold the drum in place relative to the housing when the jaws are driven by the shaft so that the jaws open and close when the shaft is respectively driven in first and second opposite directions while sufficient compressional force is applied by a hand of an operator through the projections and sleeve to the drum, the projections being made of an elastomeric material, the sleeve having an inner diameter dimensioned such that the sleeve fits over the locking drum and is elastically expanded over and frictionally urged against an exterior surface of the drum.

4,460,297

ORBITAL METHOD AND APPARATUS FOR MAKING HELICAL RACES

Manfred R. Kuehnle, 6 Linmoor Ter., Lexington, Mass. 02173

Filed Mar. 3, 1982, Ser. No. 354,342
Int. Cl.[3] B23D *7/00*
U.S. Cl. 409—293 11 Claims



1. The method of forming helical grooves in a workpiece defining a toroidal enclosure having a generally semicircular cross section, an axis of symmetry, and a circular axis perpendicular to the axis of symmetry and defining a diametric plane through the enclosure comprising the steps of

A. unidirectionally rotating the workpiece continuously about a first axis corresponding to said axis of symmetry;

B. positioning a cutting tool adjacent to the workpiece so that its cutting edge engages the enclosure wall;

C. unidirectionally rotating the cutting tool about a second axis perpendicular to the first axis and coincident with the circular axis continuously in synchronism with the rotation of the workpiece so that the cutting tool inscribes helical grooves in the enclosure wall, said second axis remaining in said diametric plane throughout the forming operation; and

D. continuing the synchronized rotations of the tool and workpiece so as to form a series of said grooves all around the enclosure wall which comprise successive convolutions of a single helix with a precise cross section.

4,460,298

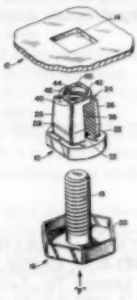
SELF RETAINING THREADED SCREW GROMMET

Gilbert Solarz, Des Plaines, and Francis G. Frano, Hoffman Estates, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 270,062, Jun. 3, 1981, abandoned. This application Mar. 29, 1982, Ser. No. 363,182

Int. Cl.³ F16B *13/06*

U.S. Cl. 411—15 **4 Claims**



1. A one-piece self retaining threaded screw grommet adapted for acceptance in a complimentary non-circular apertured workpiece and for accepting a complimentary screw, said grommet including a circumferentially continuous head and a depending shank, a through bore traversing said head and said shank, said shank being bifurcated by a pair of slots which are each disposed substantially tangentially relative to said bore and positioned generally on opposite sides of the centerline of said bore, said slots forming a pair of leg portions each of which has external shoulder means intermediate its length, said legs being generally L-shaped in cross-section, each L-shaped leg having an apex, and a pair of elongated arcuate independently flexible members adjacent the free end of said shank and integral therewith, said members being opposite said head which controls the separation of said leg portions when said complimentary screw is threaded into said bore, said members each being bendable within its own length and extending substantially from one apex to the other of said L-shaped leg portions.

4,460,299

FASTENER

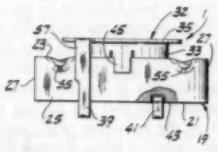
Joseph W. Kowalski, Florissant, Mo., assignor to B-Line Systems, Inc., Highland, Ill.

Continuation-in-part of Ser. No. 330,191, Dec. 14, 1981, abandoned. This application Mar. 8, 1982, Ser. No. 356,245

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ F16B *39/00*

U.S. Cl. 411—85 **10 Claims**



1. For securement to metal framing having a slot and inside and outside faces on opposite sides of the slot for attachment of parts to the framing through the slot from the outside of the slot, a fastener comprising:

an elongate body having a first face constituting an inside face and an opposite face constituting an outside face, opposite sides, and opposite ends, the width of said body between said sides being less than the width of the slot in the framing whereby the body may be generally aligned with the slot, entered into the slot and passed through the slot from the outside to the inside of the framing and then turned to extend in crosswise pollution relative to the slot for engagement of portions of the outside face of the body adjacent the ends of the body with the inside face of the framing at opposite sides of the slot;

a hole through the body extending from the outside to the inside face of the body for threadably receiving a bolt or the like;

a recess in the inside face of the body;

means for clamping the body in place in its said crosswise position comprising a clamp member carried by the body on the outside face of the body for engagement with the outside face of the framing on opposite sides of the slot when the body is generally aligned with, entered into, and passed through the slot and also when the body is turned to its said crosswise position, and retaining means for holding the clamp member in assembly with the body while permitting movement of the clamp member relative to the body between an extended position in which the clamp member is spaced away from the outside face of the body and a retracted position wherein the clamp member is more closely adjacent the outside face of the body, said retaining means comprising:

guide members extending from the clamp member on opposite sides of the body having a length greater than the thickness of the body and projecting inwardly beyond the inside face of the body, at least one of said guide members having a portion bent to provide spring finger means engageable with the inside face of the body for providing spring action tending to draw the clamp member in the direction back toward the outside face of the body for clampwise engagement of the body and clamp member with portions of the framing on opposite sides of the slot, said spring finger means being receivable in said recess in the inside face of the body for holding the clamp member in assembly with the body; and

a pair of retaining members extending from the clamp members on opposite sides of the body, said retaining members being engageable with the side of the body for preventing substantial rotational movement of the clamp member in at least one direction with respect to the body.

4,460,300

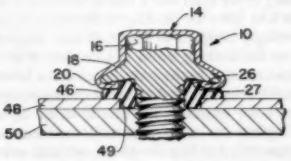
FASTENER WITH HEAD CAP HAVING A CONCEALED EDGE

John E. Bettini, Elgin, and William J. Blucher, Addison, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 11, 1982, Ser. No. 338,394

Int. Cl.³ F16G *23/00*

U.S. Cl. 411—375 **5 Claims**



1. A composite screw type fastener having a threaded shank and an integral driving head which includes a rotation inducing surface and a radially extending circumferential flange, the radial outermost region of the undersurface of said flange

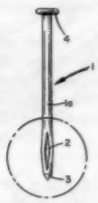
providing a clamping surface, a predetermined radial distance being defined between the radial outermost extremity of the flange and the shank, a cap member of relatively thin, substantially uniform thickness, corrosion resistant metal material of a size and shape to be complementary to the head, including the rotation inducing surfaces and radially extending flange providing close surface to surface contact between the head and cap member, the undersurface of the fastener including an annular recess spaced radially from the clamping sruface, the cap member including a circumferential skirt region of a predetermined axial dimension and of a diameter substantially equal to the diameter of the radially extending flange, the skirt region being folded under the clamping surface, a hemmed portion thereof being folded radially inwardly providing a lapped extremity of double thickness beneath the clamping surface with the free extremity situated between the clamping surface of the fastener and the outermost layer of the lapped extremity of the skirt, and said free extremity thereby being concealed.

4,460,301

RIVET NAIL

Olle Wahlstrom, Katrineholm, Sweden, assignor to Lars Billing, Helsingborg, Sweden

Continuation of Ser. No. 887,722, Mar. 17, 1978, abandoned. This application Feb. 11, 1982, Ser. No. 348,020
Claims priority, application Sweden, Mar. 21, 1977, 77031672
Int. Cl.³ F16B *15/04*
U.S. Cl. 411—449 **9 Claims**



1. A rivet nail for forming a nail joint for joining parts together, said rivet nail comprising:

a rivet portion of permanently deformable material terminating in a pointed end at one end of the rivet nail;

a shank interconnecting said one end with the other end of the rivet nail; and

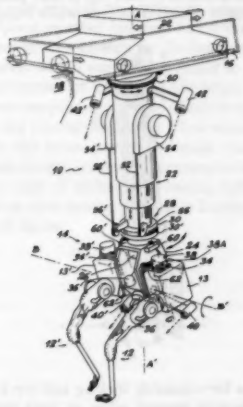
said rivet portion forming an extension of the shank and terminating in said pointed end, said extension of said shank immediately adjacent said pointed end being parted into two outwardly bulging legs which are spaced apart at least at the place of maximum bulge with the legs reunited integrally each side of the bulging, the two outwardly bulging legs being totally located in a half portion of the rivet nail including the pointed end, the two outwardly bulging legs forming a slit having an axial length at least three times as long as the width of the shank, the distance from where said legs are reunited nearest said pointed end to said pointed end is at least one-fourth the length of said slit, said slit defining at opposite ends two straight sided congruent triangles with a common base portion therebetween, said pointed end being shaped to penetrate, when driving in the rivet nail, the parts being joined and the rivet portion adapted, when subjected to an axial compression force via backing means, to cause said bulging legs to deform outwardly into permanently deformed transversely extending anchoring portions for blocking axial movement of the rivet nail with respect to joined parts.

4,460,302

HANDLING EQUIPMENT COMPRISING A TELESCOPIC SUPPORTING ASSEMBLY CARRYING A MOTORIZED ORIENTATION SUPPORT FOR AT LEAST ONE ARTICULATED SLAVE ARM

Claude Moreau, Nantes; Daniel Francois, Vendome; Jean Vertut, Issy Les Moulineaux; Paul Marchal, Gif-Sur-Yvette, and Gérard Streiff, Montfavet, all of, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 12, 1981, Ser. No. 262,920
Claims priority, application France, May 14, 1980, 80 10891
Int. Cl.³ B25J *3/04*
U.S. Cl. 414—5 **15 Claims**



1. Handling equipment of the kind comprising a supporting assembly defining three degrees of positioning freedom and at least one articulated slave arm having six degrees of freedom and supported by such supporting assembly and defining the six degrees of handling freedom, characterized in that the equipment comprises a motorized orientation support disposed between the supporting assembly and the slave arm for supporting the slave arm on the supporting assembly, the motorized orientation support having two degrees of freedom of movement and comprising a body mounted to pivot around a substantially vertical axis on such supporting assembly, at least one supporting member mounted to pivot around a substantially horizontal axis on the body for supporting the slave arm, a fixing device which can be remotely locked and unlocked carried by the supporting member for removably connecting the slave arm to the supporting member, means for controlling the pivoting of the body around the substantially vertical axis, means for controlling the pivoting of the supporting member around the substantially horizontal axis, and observation means borne by the supporting member for observing the free end of the slave arm.

4,460,303

DRILL PIPE LOADER

James A. Miller, Strasburg, Ohio, assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jul. 29, 1982, Ser. No. 403,086
Int. Cl.³ E21B *19/14*
U.S. Cl. 414—22 **7 Claims**

1. A drill pipe loader device for positioning drill pipe in a rotary earth boring machine of the type having a rotary drilling head, a vertical tower for supporting said drill pipe loader and said rotary drilling head, and a drilling means supported for vertical movement within said tower and arranged for boring a hole in the earth on a predetermined bore axis, said drill pipe loader comprising:

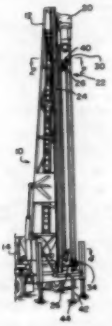
a. a vertically disposed enlongated member having an upper

end and a lower end pivotally supported along its longitudinal axis on said tower;

b. a pair of brackets rigidly attached to said elongated member and projecting outwardly, the first bracket attached to said upper end and the second bracket attached to said lower end and arranged in mutual vertical alignment;

c. a top holder plate pivotally supported on said first bracket and spaced apart from said elongated member, said plate having a plurality of openings formed therein and arranged so that as said plate is pivoted, said plurality of openings come into alignment with said bore axis in seriatim;

d. lower cup plate means pivotally attached to said second bracket independent of said top holder plate for supporting the weight of said drill pipe while being positioned;



e. latch means for releasably locking said top holder plate to prevent pivoting thereof when at least one of the said plurality of openings is in said alignment with said bore axis;

f. said latch means further comprising a striker member having at least one locating depression formed in a surface thereof and a latch member being pivotally supported and arranged to lockingly engage said locating depression to prevent said pivoting of said top holder plate, said elongated latch member is pivotally supported on said top holder plate and is constrained to pivot about a single pivot axis; and

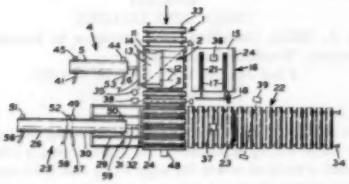
h. a guide means for positioning a pipe handling tool so that an end thereof engages said latch member and causes said latch member to pivot about said single pivot axis and disengage with said locating depression.

4,460,304

TILE ORIENTATION APPARATUS

Kevin R. Dombach, Millersville, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Nov. 15, 1982, Ser. No. 441,495
Int. Cl.³ B65G *57/08*
U.S. Cl. 414—33 **4 Claims**



1. An apparatus for orienting tile or similar flat elements comprising in combination:

(a) means for removing the top tile from a stack of tiles at a first location, said means including means for engaging the back surface of the tile, means for forcing the engaging means into engagement with the back of the tile, and means for moving the top tile-removing means;

(b) means for inverting the top tile and positioning it at a second location;

(c) means for moving the remainder of said tiles in stacked form to a location adjacent said second location;

(d) means for moving the remainder of said tiles in stacked form to a position above said inverted tile at said second location and depositing the stack thereon whereby there is a formed a tile stack having the tiles therein so oriented that the back surface of the tiles on both ends of the stack face outwardly; and

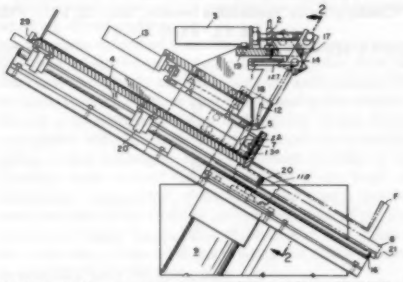
(e) means for moving the tile stack so formed from said second location to a third location.

4,460,305

STRIP STACKER

William J. Carlson, Erie, Pa., assignor to Automated Industrial Systems, Inc., Fairview, Pa.

Continuation-in-part of Ser. No. 161,136, Jun. 19, 1980, abandoned. This application Jul. 6, 1982, Ser. No. 395,715
Int. Cl.³ B65H *31/06*
U.S. Cl. 414—108 **17 Claims**



1. A strip stacker apparatus comprising guide rails (19) on said apparatus, for supporting strips (12) supported in a generally horizontal plane to be stacked in a tray (4) in generally vertical planes,

inclined guide rod support means (16) for said tray (4) and a tray support (11) below said guide rails for supporting said tray in a position inclined to said horizontal plane,

a trap door (1) in said guide rails,

friction means (20') to resist movement of said tray support on said inclined guide rods (16) holding said tray (4),

a tray support having a bottom and an end (22),

a tray (4) on said support means, said tray (4) comprising a bottom and an end extending upwardly from said bottom, said tray bottom resting on said tray support (11),

a compacter bar (5) received in said tray (4),

arm means to reciprocate said compacter bar (5) from a retracted position spaced from said tray end to a position engaging strips in said tray (4) resting against said tray end and to slide said tray against the force of said friction to a position to make room for the next strip,

detent pins (7), one of said detent pins (7) being disposed on said machine at each side of said tray (4),

cylinder means (23) to extend said detent pins horizontally into said tray into engagement with said strips when the compacter bar is retracted,

means to open said trap door to move said trap door from a said strip allowing said strip to fall into said tray between said compacter bar and said tray end,

and cylinder means (23) to withdraw said pins momentarily

to allow said strip last fallen through said trap door to move behind said detent pins,

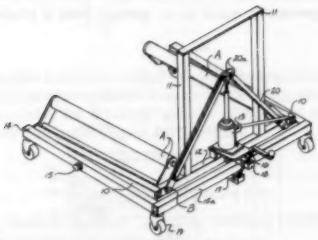
and means (20, 8) attached to said tray support engaging drive means (9) on said stacker for driving said tray support to home position when said tray is filled with strips.

4,460,306

WHEEL DOLLY

Patrick G. Hawkins, P.O. Box 3867, Greenville, S.C. 29608

Filed Jan. 5, 1981, Ser. No. 222,675
Int. Cl.³ B60B 29/00
U.S. Cl. 414—427 5 Claims



1. In a wheel dolly having a substantially L-shaped support frame with a pair of spaced load carrying legs extending horizontally, the improvement including:

a pair of opposed inwardly extending frames tiltably carried on an axis adjacent and parallel with respective load carrying legs; and

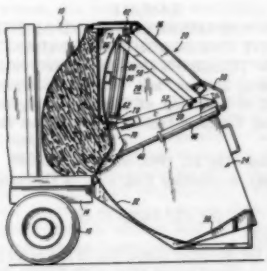
elongated oscillatable power operated means including a shaft extending substantially along each of said axis having spaced fixed connections to said inwardly extending frame tilting said frames simultaneously up and down on said axis for receiving and transporting wheels transversely positioned therebetween.

4,460,307

REFUSE COLLECTION VEHICLE COMPACTION APPARATUS

John A. Durant, Louisville, and R. Houston Ratledge, Maryville, both of Tenn., assignors to Dempster Systems Inc., Knoxville, Tenn.

Filed Aug. 2, 1982, Ser. No. 404,310
Int. Cl.³ B65F 3/04
U.S. Cl. 414—525 R 5 Claims



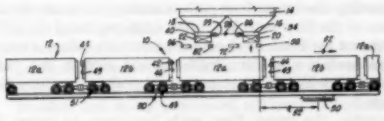
1. In a refuse collection vehicle including a wheel-supported body for receiving and containing refuse, said body including opposite side walls connected by a floor and a roof to define a forward refuse storage chamber and a rearward loading hopper separated from the storage chamber by an intermediate wall, the intermediate wall having a lower edge cooperating with the floor to define an opening connecting the hopper to the storage chamber, a shield extending between the side walls of the hopper and supported by a pair of arms for oscillatory movement between an upper position adjacent the intermediate wall and a lower position spaced above the floor of the hopper, a packing plate extending between the side walls of the hopper and pivotally connected to a lower portion of the shield, means including a pair of upper hydraulic actuating cylinders connected to oscillate the shield, and means including a pair of lower hydraulic actuating cylinders connected to pivot the packing plate relative to the shield, the improvement comprising a pair of brackets secured to the side walls of the hopper, each said bracket supporting an upper pivot member and a lower pivot member disposed in vertically spaced relation, the upper pivot members on the brackets pivotally supporting the arms which support the shield to provide for the oscillatory movement of the shield, the lower pivot members on the brackets supporting the pair of lower hydraulic actuating cylinders for pivotal movement when actuated to pivot the packing plate, the lower pair of hydraulic actuating cylinders being disposed directly under the corresponding pair of arms, and the lower pair of hydraulic actuating cylinders, the arms and the packing plate having pivot axes forming the corners of a quadrilateral figure.

4,460,308

METHOD FOR LOADING COAL INTO RAILROAD CARS

Jack L. Moon, and John C. Tompkins, both of Oklahoma City, Okla., assignors to Kerr-McGee Coal Corporation, Oklahoma City, Okla.

Filed Feb. 8, 1982, Ser. No. 346,961
Int. Cl.³ B65G 67/22
U.S. Cl. 414—786 27 Claims



6. A method for loading particles into a plurality of railroad cars wherein a control weight of a railroad car loaded with particles is established and wherein the particles are discharged through a chute and wherein a gate is disposed in the chute having an opened position and a closed position, the particles being dischargeable through the chute in the opened position of the gate and the particles being blocked in the chute by the gate in the closed position of the gate, the railroad cars moving under the chute in a direction of travel, and every other railroad car being designated an EVEN railroad car, comprising the steps of:

loading particles from the chute into the railroad cars;

weighing each EVEN railroad car loaded with particles to determine a filled weight of that EVEN railroad car;

comparing the filled weight of each EVEN railroad car with the control weight to determine a differential weight; and

adjusting the loading of particles from the chute to vary the weight of the particles loaded into the next railroad cars to be loaded from the chute so the filled weight of the next EVEN railroad car to be loaded with particles from the chute more nearly approximates the control weight.

4,460,309

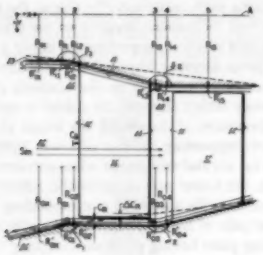
COMPRESSION SECTION FOR AN AXIAL FLOW ROTARY MACHINE

Thomas C. Walsh, New Britain, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 144,714, Apr. 28, 1980, Pat. No. 4,371,311. This application Sep. 27, 1982, Ser. No. 423,982

Int. Cl.³ F01D *9/00*

U.S. Cl. 415—1 **3 Claims**



1. A method for shifting the distribution of aerodynamic loading on each airfoil of an array of rotating airfoils in a compression section of an axial flow rotary machine of the type having an annular flow path having an inner flow path boundary and an outer flow path boundary for working medium gases which are disposed about an engine axis, the working medium gases having streamlines which have in the radial direction a first curvature having a positive mathematical sign with respect to the axis of the engine such that the curvature of the streamlines is away from the axis of the engine and a second curvature having a negative mathematical sign with respect to the axis of the engine such that the curvature of the streamlines is towards the axis of the engine, each airfoil having a leading edge region and a trailing edge region, comprising the steps of:

contouring the outer flow path boundary to cause the streamlines of the flow path in a first edge region of the airfoil adjacent the outer flow path boundary to follow a curvature having a positive mathematical sign in the radial direction;

contouring the inner flow path boundary to cause streamlines of the flow path in the first edge region of the airfoil adjacent the inner flow path boundary to follow a curvature having a positive mathematical sign in the radial direction which is the same as said positive mathematical sign;

contouring the outer flow path boundary to cause the streamlines of the flow path in a second edge region of the airfoil adjacent the outer flow path boundary to follow a curvature having a negative mathematical sign in the radial direction opposite to said positive mathematical sign; and,

contouring the inner flow path boundary to cause the streamlines of the flow path in the second edge region of the airfoil adjacent the inner flow path boundary to follow a curvature having a negative mathematical sign in the radial direction opposite to said positive mathematical sign.

4,460,310

DIFFUSER THROTTLE RING CONTROL

Francis P. Plunkett, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,981

Int. Cl.³ F04D *27/02*

U.S. Cl. 415—26 **5 Claims**

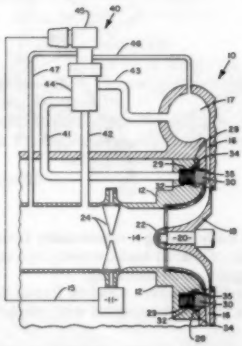
1. A centrifugal vapor compressor comprising:

a housing forming an inlet passageway for directing vapor into the compressor and a diffuser passageway for directing compressed vapor out of the compressor, said diffuser including a wall with an annular recess therein;

an impeller rotatably mounted in the housing between the inlet passageway and the diffuser passageway;

a diffuser throttle ring mounted in the annular recess to form a substantially sealed cavity between the walls of the annular recess and the back surface of the throttle ring, said throttle ring supported in the annular recess for movement across the diffuser passageway between a minimum throttling position and a maximum throttling position;

control means for determining volumetric vapor flow rate through the compressor, and for generating a first control signal when the volumetric vapor flow rate through the compressor is equal to or greater than a predetermined



flow rate corresponding to stable flow conditions for the compressor and a second control signal when the volumetric vapor flow rate through the compressor is less than the predetermined flow rate; and

valve means for detecting the control signals generated by the control means, and for connecting the cavity behind the throttle ring to a relatively low pressure source to provide a pressure difference across the throttle ring which positively maintains the throttle ring at its minimum throttling position when the first control signal is detected, and for connecting the cavity behind the throttle ring to a relatively high pressure source to provide a pressure difference across the throttle ring which positively maintains the throttle ring at its maximum throttling position when the second control signal is detected.

4,460,311

APPARATUS FOR MINIMIZING AND MAINTAINING CONSTANT THE BLADE TIP CLEARANCE OF AXIAL-FLOW TURBINES IN GAS TURBINE ENGINES

Klaus Trappmann, Dachau, and Wolfgang Krüger, Reichertshausen, both of Fed. Rep. of Germany, assignors to MTU Motoren-Und Turbinen-Union, Munich, Fed. Rep. of Germany

Filed May 21, 1981, Ser. No. 265,849

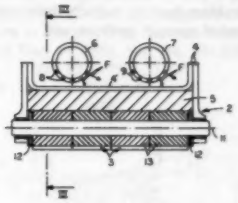
Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019920

Int. Cl.³ F01D *11/08*

U.S. Cl. 415—116 **20 Claims**

1. Apparatus for the outer shrouding of the outer free ends of rotor blades of a turbine wheel of an axial-flow turbine of a gas turbine engine, comprising a stationary casing shroud including a packing of high heat-resistance, high erosion-resistance ceramic elements facing outer rotor blade ends and the hot gas stream of the turbine, a metal ring to which said ceramic elements are secured, heat insulator means interposed between said packing and said metal ring, and means for blowing cooling fluid against said metal ring on the side thereof remote from

said insulator means for equalizing the expansion of the metal ring to that of the turbine wheel, said ceramic packing comprising a portion facing the outer ends of the rotor blades

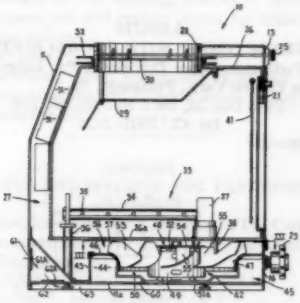


which includes knife-like, radially projecting segments extending towards said rotor blades and means defining shear points on said segments for breakage of said segments at said shear points upon contact with said rotor blades.

4,460,312
FAN UNIT

Roland T. Gerhart, Milford Township, Oakland County, Mich., assignor to IEM Ltd., Novi, Mich.

Continuation-in-part of Ser. No. 138,811, Apr. 9, 1980, abandoned. This application May 24, 1982, Ser. No. 381,244
Int. Cl.³ F04D 7/00
U.S. Cl. 415—207 **17 Claims**

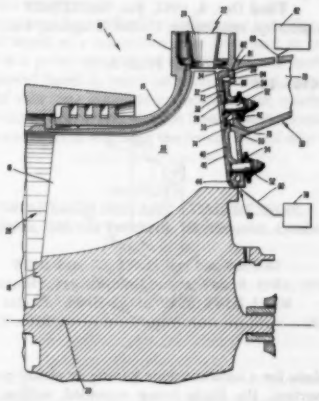


1. A fan unit adapted to be disposed in an air flow passage, said fan unit comprising an inlet housing communicating with air supply means, said inlet housing comprising an upper wall and a bottom wall, said air flow passage including a space above said upper wall of said housing, said upper wall having an annular air inlet shroud extending downwardly therefrom partway to said bottom wall of said housing, said shroud having an upper end, a lower end and an arcuate, smoothly upwardly flaring, inner surface extending from said lower end to said upper end so that the inner diameter of said shroud progressively increases in a direction toward said upper end thereof, said upper end of said shroud defining a circular toroidal air outlet opening of said inlet housing; a direct drive rotatable impeller disposed coaxial with said shroud, said impeller being rotatable about a vertical axis and having a series of corresponding, circumferentially spaced-apart blades, said blades each including a lower portion and an upper portion, said lower portion extending downwardly inside of said shroud and having a lower edge and a radially outer arcuate edge conforming to the arcuate, smoothly upwardly flaring shape of said inner surface of said shroud, said upper portion extending upwardly and radially outwardly from said lower portion into said space above said upper wall of said housing which space surrounds said circular air outlet of said housing, said upper portion having an upper edge and a radially outer edge, said impeller being effective to move air from said inlet housing axially upwardly through said shroud and then direct the air radially into said space above said upper wall of said inlet housing whereupon the air then flows through said air flow passage.

4,460,313
HEAT SHIELD FOR RADIAL GAS TURBINE

Ivar Austrem, Hokksund, Norway, assignor to A/S Kongsberg Vapenfabrikk, Kongsberg, Norway

Filed Mar. 17, 1982, Ser. No. 345,355
Int. Cl.³ F01D 25/12
U.S. Cl. 415—178 **11 Claims**



1. Heat shield apparatus for a radial inflow gas turbine, the turbine having a plurality of blades mounted on a hub for rotation about an axis, the combustion gases entering the turbine at an inlet essentially in the radial direction and leaving at an outlet essentially in the axial direction, the apparatus comprising:

(a) a first shield member in the form of an annular plate positioned concentric with the hub axis and immediately adjacent the turbine inlet;

(b) a second shield member in the form of an annular plate positioned concentric with the hub axis, said second shield member being essentially co-planar with said first shield member and being positioned adjacent to both said first shield member and the hub, said first and second shield members having respective shielding surfaces facing the combustion gas and the turbine outlet and defining, in part, the combustion gas flow path past the turbine blades;

(c) means for supporting said first and second shield members; and

(d) means cooperating with said support means for cooling said first and second shield members,

wherein said support means includes an annular plate member positioned concentric with the hub axis and axially adjacent said first and second shield members, at least some portions of said support plate being spaced from said first shield member, and wherein said cooling means includes

(i) a first source of pressurized gas at a low temperature, relative to the combustion gas temperature, and

(ii) means for channeling said pressurized low temperature first gas into the space between said first shield member and said support plate for cooling the surface of said first shield member opposite said first shield member shielding surface,

and wherein a radially inner edge of said first shield member and an adjacent radially outer edge of said second shield

member form an intershield gap, and wherein the heat shield apparatus further includes means for providing a flow path for said pressurized first coolant gas between said first and said second shield members to cooperate with said intershield gap, said first coolant gas flow through said intershield gap for film cooling the shielding surface of said second shield member.

4,460,314

VIBRATION DAMPED ROTOR BLADES FOR TURBOMACHINES

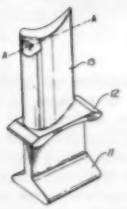
John R. D. Fuller, deceased, late of Bristol, England (by Jean M. E. Fuller, executrix), assignor to Rolls-Royce Limited, London, England

Filed Dec. 4, 1981, Ser. No. 327,685

Claims priority, application United Kingdom, Dec. 29, 1980, 8041350

Int. Cl.³ F01D *5/10*

U.S. Cl. 416—145 **5 Claims**



1. A blade for a turbomachine having an airfoil portion and a root portion, the blade being provided with a vibration damper for damping a predetermined vibration of the blade, the damper comprising a closed chamber "U"-shaped in cross section within the airfoil portion adjacent the tip of the blade, and a material within the chamber which, at least in use, is a liquid, the volume of liquid being less than the volume of the chamber, the chamber having a concave surface that faces toward the root portion and extends in a direction along the length of the airfoil portion to define a "U"-shaped path along which the liquid is constrained to oscillate, and the chamber being shaped, positioned, dimensioned and aligned relative to the blade so that the liquid forms a column which oscillates in the chamber in radial directions and the volume, mass and viscosity of the liquid being chosen in relation to the frequency (W_B) of the vibration to be damped, and the rotor speed (W_E) so that, in use, the length (L) of the column of liquid is such that

$$\frac{W_E}{W_B}\sqrt{\frac{2R}{L}} \sim 1$$

where R = the blade tip radius, thereby to cause the liquid to oscillate in a "U"-shaped path under centrifugal loads, at a natural frequency which matches, or is close to, the resonant frequency of the vibration to be damped.

4,460,315

TURBOMACHINE ROTOR ASSEMBLY

Wu-Yang Tseng, West Chester, and Bruno G. Lampsat, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jun. 29, 1981, Ser. No. 278,923

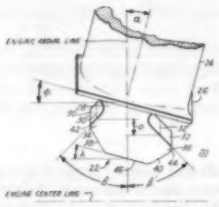
Int. Cl.³ F01D *5/30*

U.S. Cl. 416—216 **14 Claims**

1. A turbomachine rotor assembly having blade mounting means comprising:

a rotor spool defining a predetermined flowpath surface and having at least one circumferential dovetail-shaped retaining groove therein;

a plurality of radially extending blade members each comprising a root portion positioned in said retaining groove and having a pair of axially oppositely extending asymmetric shoulders having radially outwardly facing and radially spaced contact surfaces; and



said retaining groove of said rotor spool having radially inwardly facing contact surfaces for engaging said radially outwardly facing contact surfaces of said root portion.

2. A turbomachine rotor assembly according to claim 1, wherein each of said blade members further comprises an airfoil portion, a central longitudinal axis of which extends at a predetermined angle relative to a radial axis of said rotor spool so that said airfoil portion is tilted with respect to said radial axis.

4,460,316

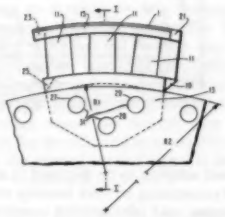
BLADE GROUP WITH PINNED ROOT

Albert J. Partington, Upper Providence, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 29, 1982, Ser. No. 454,216

Int. Cl.³ F01D *5/26*

U.S. Cl. 416—217 **7 Claims**



1. A blade group which attaches to a disc disposed on a shaft of an axial flow turbine, said blade group comprising:

a platform portion;

multiple blade portions extending radially outwardly from said platform portion;

multiple root portions extending radially inwardly from said platform portion;

said root portions comprising generally flat spaced-apart arcuate segments disposed normal to the axis of said shaft;

said disc having circumferential grooves which receive said root portions;

multiple pins extending axially through said root portions and said disc;

said platform and shroud each having a protrusion only on one corner and a notch only on an opposite corner on the same axial side of the blade group so that the protrusions on one blade group fits the notches on an adjacent blade group when a plurality of blade groups are disposed in a circular array on the disc; and

a trailing end of one of the blades in each blade group is

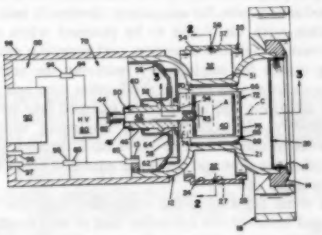
disposed between the protrusion on the shroud and the protrusion on the platform.

4,460,317

ION PUMP

Robert H. Kern, and Wilfred P. Levesque, both of Danvers, Mass., assignors to Kernco, Inc., Danvers, Mass.

Filed Dec. 14, 1981, Ser. No. 330,326
Int. Cl.³ F04B *37/02*
U.S. Cl. 417—49 **29 Claims**



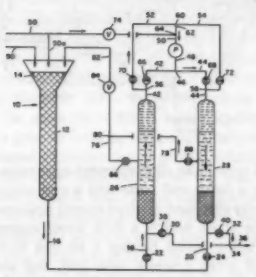
1. In an ion pump including
a pump housing
magnet means providing a magnetic field within said housing
anode means positioned in said housing and said field, and
cathode means in said housing positioned between said anode means and said magnet means for collecting ions impinging thereon,
that improvement comprising
cathode mounting means removably, frictionally and independently mounting said cathode means for removal and replacement thereof.

4,460,318

APPARATUS AND METHOD FOR TRANSFERRING SLURRIES

Joel R. Horton, Maryville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 13, 1982, Ser. No. 408,092
Int. Cl.³ F04F *1/02*
U.S. Cl. 417—54 **8 Claims**



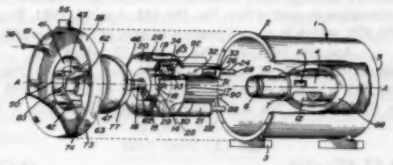
5. Apparatus for transferring a first liquid from a first region to a second region of higher pressure by a second liquid, comprising:
at least one vertically oriented vessel having upper and lower ends, said vessel containing a quantity of said first liquid in said lower end thereof, a quantity of said second liquid in the upper end thereof and a slug of liquid consisting of a mixture of said first and second liquids disposed between said first and second liquids;
an input conducting means for conducting said first liquid from said first region into the lower end of said at least one vessel;
an output conducting means for conducting said first liquid from the lower end of said vessel to said second region;
pumping means for introducing said second liquid into the upper end of said vessel at a pressure higher than the pressure of said second region to thereby force the first liquid introduced into said vessel through said output conducting means to said second region;
means associated with said input conducting means for blocking reverse flow of the first liquid therethrough while the second liquid is being introduced into said at least one vessel; and
discharge means for cyclically discharging a portion of said slug of liquid at a controlled rate from said at least one vessel at a point between its upper and lower ends while said second liquid is being introduced therein so that the flow of said first liquid is prevented from reaching the upper end of said vessel and the flow of said second liquid is prevented from reaching the lower end of said vessel.

4,460,319

TWO-STAGE ROTARY COMPRESSOR

Baruir Ashikian, 505 rue Frechette, Sherbrooke, Quebec, Canada

Filed Jan. 25, 1983, Ser. No. 460,843
Claims priority, application Canada, Feb. 8, 1982, 395794
Int. Cl.³ F04B *23/10, 1/12;* F01B *13/04*
U.S. Cl. 417—204 **16 Claims**



1. In a two-stage compressor:
(a) a casing having opposite ends;
(b) a longitudinally extending center boom fixedly mounted centrally within said casing and having an end wall closing one end of said casing; said boom having: a hollow portion, defining a gas collecting sector and a gas passage sector, a first port for collecting compressed gas in said collecting sector and a second port for discharging said compressed gas from center boom;
(c) a rotor concentrically mounted on said boom, said rotor consisting of:
(i) a hollow cylindrical core;
(ii) a cylindrical sleeve concentrically surrounding a portion of said core to define therewith an annular space;
(iii) an annular wall joining said sleeve and said core, said annular wall having, on one side thereof, a frusto-conical surface; said wall having circular openings therethrough;
(iv) hollow cylinders longitudinally extending on the opposite side of said wall; said cylinders having one open end in axial registry with said circular openings in said wall, the opposite end being closed; the cylindrical bore of said cylinders having a diameter greater than the width of said space; each cylinder having a port adapted to come in cyclic registry over said first port of the boom;
(d) a first-stage head assembly closing the other end of said casing, said assembly including a pair of separate chambers and an inclined plane surface facing said frusto-conical surface; both said surfaces being in close proximity

along a portion thereof, said plane surface including inlet and outlet ports thereon communicating respectively with the pair of chambers of said head assembly;

(e) cam means fixedly mounted in said casing and having an inclined plane surface extending parallel to the inclined plane surface of said head assembly; said cam means facing the closed end of said cylinders;

(f) cylindrical piston-vane means rotatably and axially displaceable within the bore of each said cylinders, each said piston-vane means including two coaxial adjoining bars of different outside diameters, the larger bar being substantially equal to the inside diameter of the cylindrical bore and the smaller bar traversing said closed end of said cylinder; said bars having free plane ends parallel to each other and inclined with respect to the common longitudinal axis thereof, the other end of said larger bar being perpendicular to said axis; the inclined end of said larger bar remaining in substantially continuous and complete sliding contact with the inclined plane surface of said first-stage head, the inclined end of said smaller bar remaining in substantially continuous and complete sliding contact with the inclined plane surface of said cam means; the rotation of said rotor causing a rotation of said piston-vanes around their own axis and their longitudinal displacement in said cylinders and in said annular space, to define first stage working chambers in said annular space and second stage working chambers within said cylinders;

(g) means for transferring gas compressed in said first stage working chambers to said second working chambers.

4,460,320

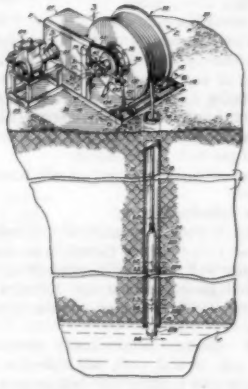
SONIC PRESSURE WAVE SURFACE OPERATED PUMP WITH EXTENSIBLE PUMPING ASSEMBLY

Arthur P. Bentley, P.O. Box 189, Willcox, Ariz. 85644

Continuation-in-part of Ser. No. 254,451, Apr. 15, 1981, Pat. No. 4,398,870, which is a continuation-in-part of Ser. No. 253,317, Apr. 18, 1981, Pat. No. 4,381,177, which is a continuation-in-part of Ser. No. 160,934, Jun. 19, 1980, Pat. No. 4,341,505, which is a continuation-in-part of Ser. No. 958,552, Nov. 8, 1978, Pat. No. 4,259,799. This application Jul. 7, 1982, Ser. No. 396,119

Int. Cl.³ F04F *7/00*

U.S. Cl. 417—240 **21 Claims**



1. A sonic pressure wave surface operated pump with extensibly retractable pumping assembly for movement toward and away from a liquid to be pumped, said pump having a column of liquid therein and comprising:

(a) a sonic pressure wave generator having a reciprocally operable piston for cyclically impacting the column of liquid;

(b) a flexible production tube coupled to said generator;

(c) a rotatable reel having at least a portion of said flexible production tube wound thereon;

(d) means coupled to said reel for selective driving of said reel in a first direction which unwindingly extends said flexible production tube toward the liquid to be pumped and in a second direction for rewinding retraction of said flexible production tube;

(e) said piston of said generator having a central recess formed in its liquid impacting face for generating the sonic pressure waves which move through said flexible production tube;

(f) a pumping assembly on the extensible end of said flexible production tube for movement therewith into communication with the liquid to be pumped when said reel is driven in said first direction, said pumping assembly having means for impingingly receiving the sonic pressure waves from said flexible production tube and responding by admitting the liquid to be pumped into said pumping assembly and reflecting the impinging sonic pressure waves to cause them to move back through said flexible production tube and carry the admitted liquid in the same direction; and

(g) a sonic pressure wave intensifier/induction unit interposed between the extensible end of said flexible production tube and said pumping assembly for receiving the sonic pressure waves from said flexible production tube, said intensifier/induction unit having means for increasing the velocity of the sonic pressure waves and directing them into said pumping assembly.

4,460,321

AXIAL CLEARANCE ADJUSTMENT MECHANISM FOR SCROLL TYPE FLUID DISPLACEMENT APPARATUS

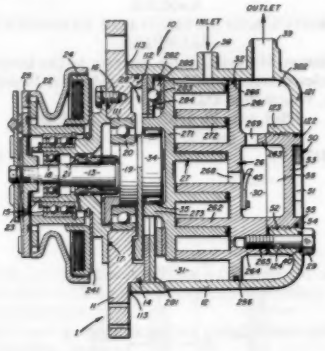
Kiyoshi Terauchi, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Mar. 9, 1982, Ser. No. 356,373

Claims priority, application Japan, Mar. 10, 1981, 56-33091

Int. Cl.³ F01C *1/02, 19/00, 21/10*

U.S. Cl. 418—55 **11 Claims**



1. In a scroll type fluid displacement apparatus including a housing having a front end plate and a cup shaped casing, a fixed scroll fixedly disposed relative to said housing and having a first end plate from which a first wrap extends into said housing, an orbiting scroll having a second end plate from which a second wrap extends, said first and second wraps interfitting at an angular and radial offset to make a plurality of line contacts to define at least one pair of sealed off fluid pockets, a driving mechanism to effect orbital motion of said orbiting scroll, and rotation preventing means for preventing rotation of said orbiting scroll during orbital motion so that the fluid pockets change volume, the improvement comprising:

an opening having a threaded portion formed in an end plate of said cup shaped casing;

an adjusting screw screwed into said threaded portion of said opening to adjust the axial clearance between said fixed and orbiting scrolls, said adjusting screw having an axial end surface abutting against an axial end surface of said first end plate of said fixed scroll; and

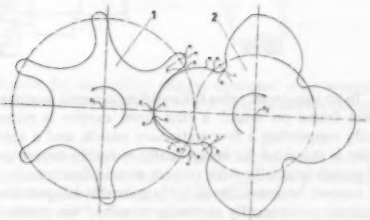
a plurality of fastening devices fastening said fixed scroll to said end plate of said cup shaped casing to maintain the axial clearance between the axial end surfaces of each of said wraps and the inner surfaces of each of said end plates after said adjusting screw is screwed into said opening.

4,460,322

ROTORS FOR A ROTARY SCREW MACHINE

Lauritz B. Schibbye, Saltsjö-Duvnäs, and Sture Fredlund, Vällingby, both of Sweden, assignors to Sullair Technology AB, Stockholm, Sweden

Filed Dec. 22, 1982, Ser. No. 452,394
Claims priority, application Sweden, Dec. 22, 1981, 8107699
Int. Cl.³ F01C *1/16*; F04C *2/00*
U.S. Cl. 418—201 **26 Claims**



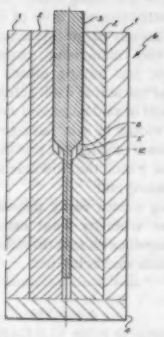
1. Two meshing rotors provided with helical lands and intervening grooves and adapted for rotation around parallel axes in a working space in a rotary screw machine, where one groove of one rotor cooperates with a corresponding land of the second rotor so that a chevron shaped chamber is formed, the open end of which opens to the high pressure end of the machine, of which rotors one is of female rotor type and so designed that a major portion of each groove flank is located inside the pitch circle of the rotor and a minor portion is located outside the same, and the second rotor is of male rotor type and so designed that a major portion of each land flank is located outside the pitch circle of the rotor and a minor portion is located inside the same, and in a plane perpendicular to the rotor axes, the substantial part of a trailing flank of each female rotor groove forming the peripherally outer wall of said chevron shaped chamber has a profile which is generated by a corner on the male rotor flank, and a leading flank of each female rotor groove forming the peripherally inner wall of said chevron shaped chamber has a profile which substantially is line-generated by a flank profile of the male rotor, and the flank profiles of each male rotor land follow the envelopes formed by corresponding profiles on the female rotor flank when the lands and grooves move into and out of mesh with each other, characterized in that the profiles are so formed that the torque acting on the female rotor by the gas forces in the machine is 17–19.5%, of the corresponding torque on the male rotor, and that the blow hole area formed at the high pressure side of the rotor mesh does not exceed a value corresponding to 25 mm^2 per liter volume of the chevron shaped chamber when this chamber has its maximum volume, calculated for a male rotor diameter of 100 mm, a rotor length of 150 mm and a wrap angle of the male rotor of 300°.

4,460,323

PRESS FOR SYNTHETIC DIAMONDS

Ioan Toplicescu, 2/21 Kidman St., Coogee, New South Wales, 2034, Australia

Filed May 6, 1983, Ser. No. 492,267
Int. Cl.³ B30B *11/32*
U.S. Cl. 425—77 **5 Claims**



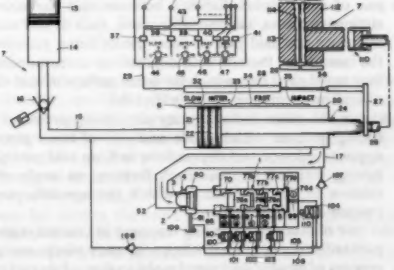
1. A press comprising; a body having a cavity with parallel sides extending from an opening on an external surface of the body; each of at least two of said sides has extending from it and into said cavity an inclined body surface facing said opening; a movable press member slidably received within said cavity so as to be guided by said sides in movement within said cavity; at least two inclined press surfaces extending transversely outwardly from said movable press member and axially aligned with said body surfaces so as to co-operate therewith in conjunction with said sides and said movable press member to define at least two enclosed cavities to receive material to be compressed by said press; and wherein said cavities are equally angularly arranged about the longitudinal axis of said cavity and movable press member so that forces within said press are balanced.

4,460,324

SHOT CYLINDER CONTROLLER FOR DIE CASTING MACHINES AND THE LIKE

William Van Appledorn, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Apr. 23, 1981, Ser. No. 256,956
Int. Cl.³ B29F *1/04*; F15B *13/16*, *11/18*
U.S. Cl. 425—166 **35 Claims**



1. A molding machine having a die means in combination with a shot cylinder and a controller therefor, wherein:

said shot cylinder comprises a housing having a shot piston mounted slidably therein for actuating a plunger for in-

jecting a flowable material into said die, whereby translation of said shot piston in said housing controls the speed at which said die means associated with the die casting machine is injected with said flowable material;

said controller comprising:

a valve connected with one side of said shot cylinder, and including a body having a fluid passageway therethrough, and throttling means disposed in said passageway for restricting the flow of fluid therethrough;

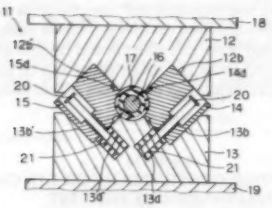
at least two, lineally extensible actuators interconnected in an end-to-end relationship, connected with said throttling means, and having means for independently extending and retracting each actuator, whereby selective manipulation of said actuators varies the position of said throttling means in said passageway and thereby controls extension of said shot piston, and thereby regulates the speed at which the flowable material is injected into said die means; and

said throttling means being disposed at a free end of a valve stem, whereby fluid exhausted from said shot cylinder impinges on said throttling means and automatically retracts said actuators.

4,460,325
METAL MOLD FOR VULCANIZATION OF REINFORCED HOSE

Yoshimi Hori; Takashi Ishida, both of Gifu, and Keizo Hayashi, Nagoya, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Dec. 23, 1982, Ser. No. 452,863
Claims priority, application Japan, Dec. 23, 1981, 56-208464
Int. Cl.³ B29H 7/14
U.S. Cl. 425—393 **7 Claims**



1. A metal mold for the manufacture of a reinforced hose by the compression and vulcanization of an unvulcanized hose within the cavity of said metal mold, which metal mold comprises:

a movable piece,

a stationary piece, and

a pair of inner pieces disposed between said movable and stationary pieces, said movable piece, each of said stationary piece and said pair of inner pieces being provided at the inner sides thereof with depressions corresponding to four equal parts into which the inner surface of said cavity of said metal mold is radially divided,

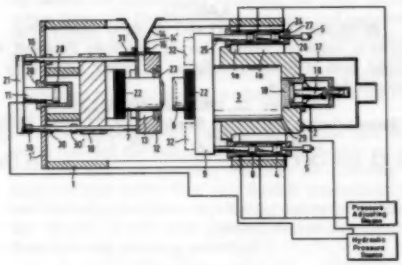
said movable piece and stationary piece being provided with sliding grooves which guide said pair of inner pieces to opposite sides of said depressions to form said cavity and having inclined surfaces each forming an angle of 45° relative to the direction in which the movable piece is opened and closed,

said pair of inner pieces being disposed in contact with said inclined surfaces at least when said inner pieces are in the process of closing said metal mold so that when said metal mold is closed, said pair of inner pieces are synchronously moved art relatively the same speeds with said movable piece and said stationary piece in the direction of compressing said unvulcanized hose and said pair of inner pieces, said movable piece and said stationary piece compress said unvulcanized hose in four directions at the same pressure.

4,460,326
PRESS FOR MOLDINGS

Hans-Henning Croseck, Konz, and Rolf Jung, Trier, both of Fed. Rep. of Germany, assignors to Laeis-Werke AG., Trier, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 177,782, Aug. 13, 1980, abandoned. This application Jun. 28, 1982, Ser. No. 392,767
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935077
Int. Cl.³ B29C 3/00
U.S. Cl. 425—411 **6 Claims**



1. In an improved press for molding ceramic material having a base frame on which a first front carrier is mounted for fixedly supporting a first stationary punch, and a second rear carrier is mounted for reciprocally movably supporting a second punch coaxially with respect to said first punch, and first and second horizontally slidably movable support frames respectively reciprocally movably mounted via piston-cylinder means on said first and second carriers, and male-female mold means respectively operatively mounted on said first and second punches for pressing a ceramic molding therebetween, the improvement comprising

(a) said second support frame on which one half of said male-female mold means is mounted is operatively fixedly connected to a first pair of piston rods having a first pair of pistons, said first pair of pistons being mounted in a pair of cylinders which are fixedly mounted in said second carrier, said pair of cylinders being operatively connected to a source of hydraulic pressure so as to form with said first pair of pistons first double-acting piston-cylinders, and second pistons and piston rods operatively mounted in said pair of cylinders so as to function as flying pistons therein, each of said pair of cylinders having a rear end wall remote from said second carrier which is provided with a bore, said second piston rods extending through said bores and being slidably disposed therein, and limit stop means respectively adjustably operatively mounted on the free ends of said second piston rods to limit the advance of the corresponding half of said male-female mold means;

(b) a second piston-cylinder means is operatively connected to said second support frame and only exerts pressure on the corresponding half of said male-female mold during the molding process, thereby compressing the ceramic molding at a ratio of about 2:1;

(c) stripper means operatively mounted on said first support frame, a pair of rods being slidably mounted in said first front carrier and fixedly secured to said first support frame, a third double-acting piston-cylinder being operatively mounted in said base frame and said pair of rods being connected to said stripper means being slidably in said first front carrier, said third double-acting piston-cylinder also being operatively connected to a source of hydraulic pressure; and

(d) including first and second permanent magnet means respectively operatively connected to said stationary and movable punch, said stationary and movable punch being respectively supported on said first front carrier and said horizontally slidably movable support frame via said first and second permanent magnet means, whereby the space between said first and second punches is laterally substantially freely accessible when said press is in an inoperative position.

4,460,327

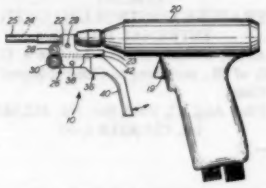
WIRE INSULATION SOFTENING DEVICE

Willard E. Rapp, Griggstown, N.J., assignor to AT&T Technologies, Inc., New York, N.Y.

Division of Ser. No. 307,454, Oct. 1, 1981, Pat. No. 4,382,456. This application Feb. 25, 1983, Ser. No. 469,665

Int. Cl.³ B29B *3/00*

U.S. Cl. 425—446 **2 Claims**



1. A device for use with a trigger operated wire wrapping tool for softening the insulation of a wire, said device comprising:

a frame;

a spring biased arm pivotally mounted on the frame, said arm being gun-shaped and including a trigger end positioned in alignment with the trigger of the tool; and

a pair of opposed rollers, one of the rollers being rotatably mounted on the frame and the other of the rollers being rotatably mounted on the arm, said pair of opposed rollers being relatively movable away from one another by upward movement of the trigger end of the arm to enable an insulated wire to be wrapped to be passed therebetween, and relatively movable toward each other by releasing the trigger end of the arm for engaging and softening the insulation which remains on the wire.

4,460,328

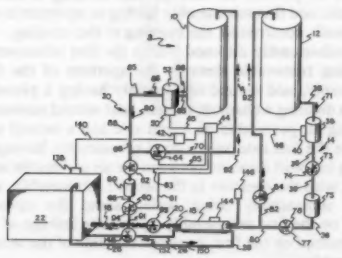
PROCESS AND APPARATUS FOR UTILIZING WASTE OIL

Werner J. Niederholtmeyer, 7804 Fritz Rd., Fort Wayne, Ind. 46802

Division of Ser. No. 220,827, Dec. 29, 1980, Pat. No. 4,392,820. This application Jul. 12, 1983, Ser. No. 513,017

Int. Cl.³ F23D *11/44*; F23G *7/64*

U.S. Cl. 431—11 **6 Claims**



1. A process for utilizing separately within an automatically controlled heating mechanism both conventional heating oil fuel and waste oil fuel, the fuels contained in separate storage means and provided to the heating mechanism by automatic control means, operating valve means, respective supply lines, and means for pumping, comprising the steps of: continuously sensing temperature by means of thermostat means operatively connected to the control means; sensing a predetermined temperature and initiating a heating cycle by the control means actuating, in response to the thermostat means, respective pumping means to supply for a predetermined period of time conventional heating oil fuel for combustion at burner means disposed in said heating mechanism, in order to attain a heating mechanism temperature of a predetermined value; automatically closing the operating valve means after said predetermined period of time and commencing operation of respective pumping means to supply waste oil fuel to the heating mechanism for combustion therein, the supply of waste oil fuel being provided to the heating mechanism without comingling with the conventional heating oil fuel; preheating the waste oil fuel to a control flash temperature prior to combustion at said burner means in order to enhance its combustibility; continuously monitoring the temperature within said heating mechanism and controlling the inflow of fuel in accordance therewith; sensing a heating temperature and in response automatically terminating the supply of waste oil fuel and opening the operating valve means wherein the control means deactuates the pumping means for waste oil fuel and the open operating valve means permits conventional heating oil fuel to be supplied to the burner means for combustion; and cleaning the burner means by burning conventional heating oil fuel for a predetermined time, whereby the fuels supplied to the heating mechanism during the heating cycle are effectively prevented from being comingled.

4,460,329

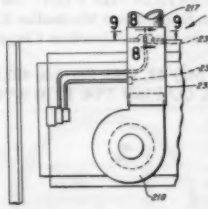
POWER VENT AND CONTROL FOR FURNACE

Bryan O. Trent, Smyrna, Tenn., assignor to Heil-Quaker Corporation, Lewisburg, Tenn.

Continuation-in-part of Ser. No. 116,021, Jan. 23, 1980, abandoned. This application Jan. 11, 1982, Ser. No. 338,664

Int. Cl.³ F23N *3/00*

U.S. Cl. 431—20 **13 Claims**



1. In a heating apparatus having means defining a combustion chamber, means for effecting combustion of fuel in said chamber, a vent for discharging products of combustion from said apparatus, blower means connected to said vent for forcibly flowing the products of combustion outwardly through said vent, and means defining an orifice in said vent, the improvement comprising:

means for sensing the static pressure upstream of and adjacent said orifice means;

means responsive to the rate of flow of products of combustion through said vent and the pressure at the orifice for selectively restricting flow through said orifice for providing an increased rate of rise of the static pressure at said pressure sensing means upon initiation of operation of said blower means; and

control means for preventing operation of said combustion

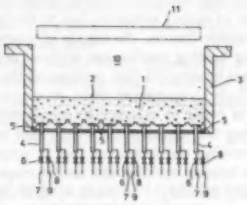
means in the event said pressure sensing means fails to sense a preselected pressure condition.

4,460,330

FLUIDIZED-BED COMBUSTION SYSTEM

Minoru Asai, Kamagaya; Kiyoshi Aoki, Chiba, and Osamu Takeuchi, Mitaka, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1983, Ser. No. 483,109
Claims priority, application Japan, Apr. 20, 1982, 57-65707
Int. Cl.³ F23D *19/00*
U.S. Cl. 431—170 **8 Claims**



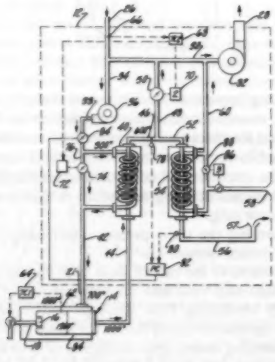
1. A fluidized-bed combustion system comprising a plurality of gas distribution pipes disposed at a bottom of a furnace shell or combustion chamber and extending through said bottom of said furnace shell or combustion chamber into a fluidized-bed formed in said furnace shell or combustion chamber, each of said gas distribution pipes including a plurality of injection ports located adjacent to the bottom of said fluidized bed, each of said gas distribution pipes being communicated at its lower end extended out of said furnaces shell or combustion chamber with an individual air supply line with an air flow control valve and an individual fuel supply line with a fuel flow control valve, whereby aid and fuel supplied into said gas distribution pipes are mixed therein and injected or sprayed through said injection ports into the fluidized bed.

4,460,331

FUME INCINERATION FOR PAINT DRYING OVEN

John Robson, Kent, England, and Maximilian K. Carthew, Troy, Mich., assignors to Haden Schweitzer Corporation, Madison Heights, Mich.

Filed May 12, 1983, Ser. No. 493,858
Int. Cl.³ F26D *7/04*; F27B *9/04*
U.S. Cl. 432—72 **11 Claims**



1. A fume incinceration system for use with a combustible-effluent-producing process site such as a paint drying oven comprising:

an incinerator having a fueled burner;

first duct means for drawing effluent from the site and supplying it to the incinerator, first flow control means associated with said first duct means;

second duct means for returning part of the incinerated effluent to the site; second flow control means associated with said second duct means;

third duct means for venting part of the incinerated effluent to the atmosphere; means in said third duct means for detecting an increased flow therethrough as a result of decreased flow through the second duct means;

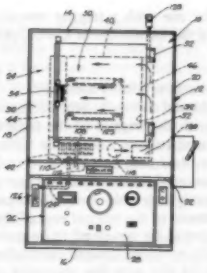
and means connecting said detecting means to said first flow control means for reducing flow in the first duct means when flow in the third duct means increased beyond a predetermined amount.

4,460,332

TEMPERATURE CONTROLLED OVEN WITH INTERNAL FILTER

Joseph A. Lawler, Flossmoor, and Lawrence G. Viero, Oak Forest, both of Ill., assignors to General Signal Corporation, Stamford, Conn.

Filed Aug. 27, 1982, Ser. No. 412,183
Int. Cl.³ A21B *1/00*
U.S. Cl. 432—72 **9 Claims**



1. A temperature controlled oven for heat treating work in process comprising, in combination:

a housing having a plurality of walls forming a hollow first enclosure and an opening in one of said walls giving access to the interior of said enclosure,

a layer of heat insulating material disposed within and adjacent to the walls of the housing defining a cavity within the housing,

a first subassembly disposed within the cavity of the housing, said first subassembly having a plurality of walls sealed together to prevent air leakage and forming a second enclosure, said first subassembly having an aperture in one of the walls confronting the opening in the housing,

a second subassembly disposed within the first subassembly and being removable through the aperture of the first subassembly, said second subassembly having a plurality of walls defining a chamber therein, said second subassembly being air permeable on a first side and a second side opposite the first side, said second subassembly having an opening in a wall disposed between the air permeable sides aligned with the aperture in the second subassembly, said second subassembly being sealed about the opening thereof on the first subassembly against the leakage of air,

a filter mounted on the first air permeable side of the second subassembly,

air circulation means including a blower and a heater within the first subassembly exterior of the second subassembly, said air circulations means translating a flow of air along a

path extending through the blower, the heater, the first air permeable side of the second subassembly, the filter, the chamber of the second subassembly, and the second air permeable side of the second subassembly.

and means for sealing the aperture of the first subassembly from the ambient atmosphere.

4,460,333

FURNACE GRATE

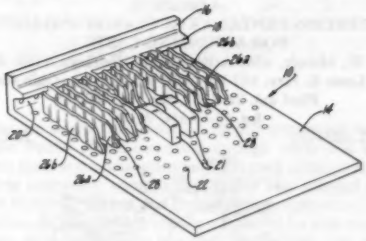
Carlo Longaretti, Via Bergamo 3, Treviglio (Bergamo), Italy

Filed Aug. 26, 1982, Ser. No. 411,879

Claims priority, application Italy, Mar. 5, 1982, 21044/82[U]

Int. Cl.³ F27D *15/02*; F26B *11/02*; F27B *9/14*

U.S. Cl. 432—80 **13 Claims**



11. A grate over which hot clinker is adapted to be conveyed for cooling the clinker comprising, a cast metal plate having a downwardly extending pusher flange at its forward end, said plate having a plurality of air openings therein arranged in rows which extend lengthwise of the plate to adjacent the front end thereof, the bottom face of said plate having a plurality of downwardly projecting fins which extend lengthwise of the plate between the rows of openings in zig-zag fashion, said fins being continuous in a lengthwise direction and a second set of fins on the bottom face of said plate extending lengthwise of the plate between the first-mentioned fins, said second set of fins being interrupted in a lengthwise direction.

4,460,334

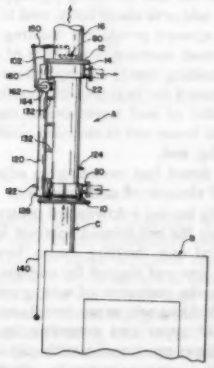
RECUPERATOR

James E. Watson, Southgate, Mich., assignor to North American Mfg. Company, Cleveland, Ohio

Filed Nov. 5, 1982, Ser. No. 439,397

Int. Cl.³ F24H *1/00*; F28F *19/00*

U.S. Cl. 432—223 **17 Claims**



1. In a recuperator of the type having an inner chamber defining an elongated flow passage of a selected cross-sectional shape, said passage having a lower hot gas entrant end adjacent the gas outlet of a heating furnace, and an upper gas exit end above and axially aligned with said lower end, an outer chamber surrounding said inner chamber, a wall member between said inner chamber and said outer chamber, means for passing air to be heated through said outer chamber along said wall member, and a radiator member adjacent said upper end, the improvement comprising: said radiator member being a plug having an outer periphery generally matching, but smaller than, said cross-sectional shape of said passage whereby said plug can move axially in said passage, and means for moving said plug axially through said flow passage between a normal operating position adjacent said upper end of said flow passage and a furnace capping position adjacent said lower end of said flow passage.

4,460,335

SYSTEM FOR PREVENTING EXCESS PRESSURE IN A GAP BETWEEN A DOUBLE-SHELL STRUCTURE OF A BLAST HEATING APPARATUS

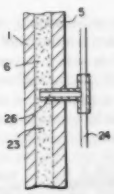
Kurt Braun, Stadecken-Elsheim, and Friedrich Eschmann, Ginsheim-Gustavsburg, both of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

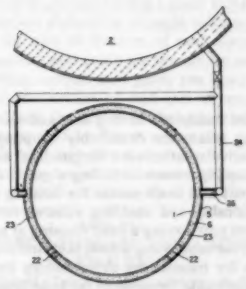
Filed May 5, 1983, Ser. No. 492,005

Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218127

Int. Cl.³ F24B *14/08*

U.S. Cl. 432—247 **4 Claims**





1. In a blast heating apparatus of the type including an inner metal shell having therein a refractory lining, an outer metal shell surrounding at least a portion of said inner metal shell and defining therewith a double shell structure with a gap between said inner and outer shells, and a dry pourable material filling at least a portion of said gap, said blast heating apparatus further including a grate chamber, the improvement of means for preventing the buildup of excess pressure in said gap, said means comprising:

piping means for connecting said gap to an area of said blast heating apparatus below said grate chamber.

4,460,336

ORTHODONTIC ATTACHMENTS

Dennis C. Smith, 183 St. Clair Ave. E., Toronto, Ontario, and Rolf Maijer, 435 Trunk Rd., Ste. 207, Duncan, British Columbia, both of Canada

Filed Jul. 27, 1982, Ser. No. 402,307
Int. Cl.³ A61C 7/00
U.S. Cl. 433—9 4 Claims

1. An orthodontic bracket comprising an attachment base for the adhesion of said bracket to a tooth and having a tooth engaging surface varying in size from about 3 mm in diameter to an area of about 4×8 mm, and a porous coating on said tooth engaging surface consisting of metal spheres joined to each other and to said tooth engaging surface at their points of contact therewith, said porous coating having a thickness of about 50 to about 300 microns and a porosity of about 10 to about 50 volume %, spheres having a particle size of −100 mesh, and said porous coating, the interface between said porous coating and said tooth engaging surface and said tooth engaging surface having a structural strength of at least 8 MPa.

4,460,337

DENTAL HANDPIECE

Hermann Landgraf; Werner Schuss, both of Heppenheim, and Rainer Worschischek, Lorsch, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 13, 1982, Ser. No. 408,125
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132995
Int. Cl.³ A61C 1/00
U.S. Cl. 433—29 29 Claims

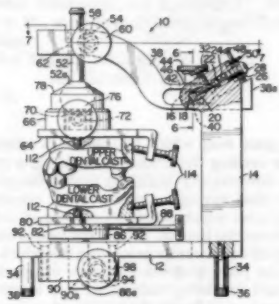
1. In a dental handpiece having first and second handpiece parts, coupling means for detachably coupling the parts together for relative rotation on a longitudinal axis of the hand piece, said coupling means including a guide element at one end of each part and latch means for holding said parts in a coupled relationship and enabling relative rotation therebetween, said first part having a head housing at an end opposite to the one end for supporting a tool, said first and second parts having means for transferring drive energy from the second part through the guide elements to the head housing of the first part to drive the tool, and said hand piece having means for providing light to the head housing, the improvements comprising said means for providing light including a light source mounted in the second part, a light conducting element in each of said first and second parts and optical means for forming a rotatable optical coupling between the conducting element of the first part and the conducting element of the second part, said coupling means including a transfer element and a light transmission ring having an annular light receiving surface, said light transmission ring being coaxially mounted on the longitudinal axis of the first part adjacent the guide element and being coupled to the light conducting element of the first part extending to a point adjacent the head housing, and said transfer element being coupled to the light source by the conducting element of the second part and being positioned adjacent the guide element of the second part so that when the two parts are coupled together, the transfer element optically engages the receiving surface of the ring to transfer light from the source to the ring for all positions of relative rotation between the parts.

4,460,338

PLASTERLESS DENTAL ARTICULATOR AND METHOD FOR MOUNTING CASTS

Roger W. Mercer, 1340 Arlington Dr., Fairborn, Ohio 45324, and Louis E. Hay, 847 Woodhill Rd., Dayton, Ohio 45431

Filed Jul. 22, 1982, Ser. No. 400,975
Int. Cl.³ A61C 11/00
U.S. Cl. 433—60 23 Claims



1. A dental articulator for releasably mounting and adjusting matched upper and lower dental casts used for the fabrication of dentures and having a pre-formed aperture in the base of said casts, and a pre-formed aperture in the perimeter of said casts, said articulator comprising:

(a) an articulator body having a base element, at least one vertical element, and a normally horizontal leaf element pivotally supported at the upper end of said vertical element;

(b) a lower dental cast mounting jig supported by the base element of said articulator body, said lower mounting jig having an upward protruding locating pin for engaging the pre-formed aperture in the base of said lower dental cast, and holding means having a contoured member at one end thereof for engaging the pre-formed aperture in the perimeter of said lower dental cast and releasably holding said lower cast in mounted position on said lower mounting jig; and,

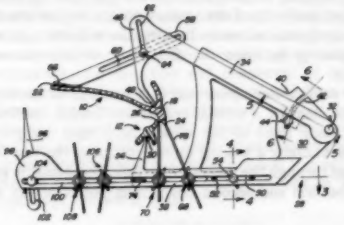
(c) an upper dental cast mounting jig adjustably supported by the leaf element of said articulator body, said upper mounting jig having a downward protruding locating pin for engaging the pre-formed aperture in the base of said upper dental cast, holding means having a contoured member at one end thereof for engaging the pre-formed aperture in the perimeter of said upper dental cast and releasably holding said upper dental cast in mounted position on said upper cast mounting jig, said upper cast mounting jig in combination with said lower cast mounting jig having adjusting means for adjusting said mounted dental casts in anatomical centric relationship with each other.

4,460,339

DENTURE ANALYZER

James A. Casper, 1830 S. 8th Ave., Yuma, Ariz. 85364

Filed Feb. 24, 1983, Ser. No. 469,399
Int. Cl.³ A61C 9/00
U.S. Cl. 433—72 29 Claims



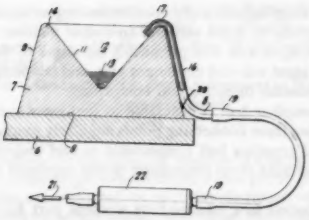
1. For use in analyzing reference points intersected by median and frontal planes extending through upper and lower dentures fixed in occlusal relationship to each other, a denture analyzing instrument comprising a planar base adapted to be aligned with said median and frontal planes, a pivot mounted on the base, a pivot arm pivotally connected by said pivot to the base, an extensible arm having a longitudinal axis, means mounting the extensible arm on the base for adjustment along said longitudinal axis, fixed tips respectively projecting from the base and the extensible arm, means for releasably locking said arms on the base in adjusted positions wherein the fixed tips respectively contact the upper and lower dentures at two of said reference points in the median plane and adjustable tip extension means mounted on the pivotal arm for contact with a third of the reference points on the upper denture in said median plane, said three of the reference points defining a denture spacing triangle.

4,460,340

RECEPTACLE FOR DENTAL AMALGAM

Marvin M. Stark, Los Altos Hills; Kenneth B. Soelberg, Menlo Park, and Roger B. Pelzner, San Mateo, all of Calif., assignors to Marvin M. Stark Research Corporation, Santa Clara, Calif.

Filed Jan. 21, 1983, Ser. No. 459,812
Int. Cl.³ A61C 17/04
U.S. Cl. 433—91 2 Claims



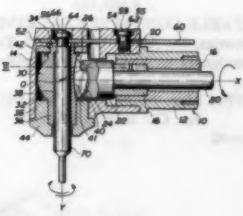
1. A dental amalgam device comprising an imperforate amalgam container open to the atmosphere within a top rim and adapted to contain a liquid substance emitting noxious vapor to the atmosphere from the surface of said liquid, a duct having opposite ends and at one of said ends having a return hook extending over said rim and engaged with said rim of said receptacle, said duct hook being open at said one end to the atmosphere and being positioned to be directed downwardly just above said surface within the interior of said container in position to receive noxious vapor and air, means for connecting the other of said ends of said duct to a vacuum source for passing said noxious vapor and air through said duct, and means between said other end of said duct and said vacuum source for absorbing said noxious vapor from said passing air and for discharging said air.

4,460,341

DENTAL HANDPIECE

Toshimasa Nakanishi, Kanuma, Japan, assignor to Nakanishi Dental Mfg. Co., Ltd., Kanuma, Japan

Continuation of Ser. No. 342,918, Jan. 26, 1982, abandoned. This application Sep. 23, 1982, Ser. No. 422,441
Claims priority, application Japan, May 8, 1981, 56-70007
Int. Cl.³ A61C 3/03
U.S. Cl. 433—122 2 Claims



1. A dental handpiece comprising:

a handle portion;

a powerhead assembly integrally connected to said handle portion;

a driving shaft rotatably journalled in said handle portion for rotation around the longitudinal axis of said driving shaft, said driving shaft having a disc at the outer end thereof with an outer end surface which is spherically concave, said concave end surface having a cylindrical guide pin thereon adjacent the periphery of said surface;

a hollow driven shaft rotatably mounted in said powerhead assembly for rotation around the longitudnal axis of said driven shaft, said axis of said hollow driven shaft being perpendicular to the axis of said driving shaft, the middle portion of said hollow driven shaft having a surface with a spherical shape complementary in shape to the shape of the concave outer end surface of said disc on said driving shaft, said middle portion having a guide slot in the spherical shape surface defined by straight sides and extending parallel to the axis of rotation of said driven shaft and slidably receiving said guide pin therein for smooth reciprocating sliding motion, said guide pin being directed to the point of intersection of said axis of rotation of said driving shaft and the center of the sphere of which said spherical shape surface forms a part for coupling said driving shaft with said driven shaft; and

means for holding a dental tool in said hollow driven shaft.

4,460,342

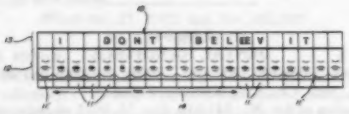
AID FOR SPEECH THERAPY AND A METHOD OF MAKING SAME

Michael Mills, Pointe Claire, Canada, assignor to M.B.A. Therapeutic Language Systems Inc., Westmount, Canada

Filed Jun. 15, 1982, Ser. No. 388,646
Int. Cl.³ G09B 19/04
U.S. Cl. 434—185 8 Claims

1. A speech therapy visual teaching aid comprising an elongated rectangular chart having vertically extending segments disposed side by side along the length of said chart, each said segment corresponding to a precise equal time interval as indicated by a time scale displayed in association with said segments to form time frames, each said time frame having an illustration of the human mouth to graphically display the lips, tongue and jaw positions of the mouth in making a sound alphabetically displayed in an alphabet receiving portion of

said time frames, said sound being constituted by one or more words, said words being displayed with one or more alphabet characters disposed in said alphabet receiving portion of said



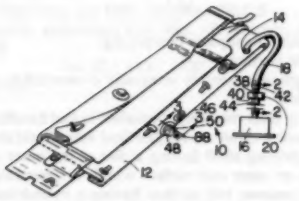
time frames in association with said illustrations and said time scale, said words being spaced apart by one or more time frames representative of the lapse time of said words.

4,460,343

INFLATABLE CONTAINER PACKING SYSTEM

John F. Heimovics, Jr., Akron, and Paul G. Tritt, Norton, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,185
Int. Cl.³ B63C *9/02, 9/04*
U.S. Cl. 441—40 **3 Claims**



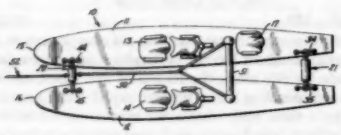
1. A packing system for an inflatable, foldable container comprising an aspirator for inflating said container, said aspirator having an inlet open to the atmosphere during operation of said aspirator, valve means to close said inlet when said aspirator is not operable, vacuum means in communication with said valve means in said inlet providing a first predetermined vacuum for removing a gaseous medium from said container at a sufficient flow to deflate said container in a reasonable period of time and vacuum control means responsive to the difference in pressure in said container and atmospheric pressure in communication with said vacuum means for admitting air at atmospheric pressure into said container at a second predetermined vacuum substantially less than said first predetermined vacuum to facilitate packing of the container in a limited space.

4,460,344

WATER SKI TRAINING APPARATUS

Walter F. Notermann, Victoria, Minn., assignor to Lake Region Products, Inc., Victoria, Minn.

Filed Jul. 14, 1982, Ser. No. 398,450
Int. Cl.³ A63C *11/00*
U.S. Cl. 441—73 **17 Claims**



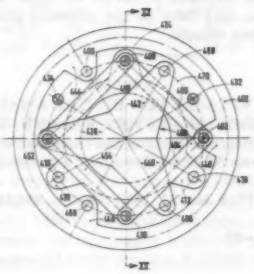
1. A water ski training apparatus, comprising:
a first water ski and a second water ski;
first connecting means connecting portions of the first and second water skis at a first connection point on the first water ski and a second connection point on the second water ski positioned generally symmetrically to the first connection point on the first water ski;
said first connecting means including a flexible tension element extended between the first and second connection points limiting the maximum permissible spacing between the first and second connection points, and substantially rigid compression means limiting the minimum permissible spacing between the first and second connection points;
a water ski tow line connected to a first end of the flexible tension element, a second end of the flexible tension element being fixed to the substantially rigid compression means whereby a towing force exerted by the tow line is applied through the substantially rigid compression means and the first and second connecting points of the water skis.

4,460,345

SHAFT COUPLING

Ilie Chivari, Berliner Strasse 1, D-4690 Herne 2, Fed. Rep. of Germany

PCT No. PCT/DE80/00164, 371 Date Jun. 26, 1981, 102(e) Date Jun. 26, 1981, PCT Pub. No. WO81/01317, PCT Pub. Date May 14, 1981
PCT Filed Oct. 29, 1980, Ser. No. 279,964
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943921; Feb. 27, 1980, 3007268; May 7, 1980, 3017398
Int. Cl.³ F16D *3/50, 3/62, 3/78*
U.S. Cl. 464—69 **1 Claim**



1. Shaft coupling drivingly interconnecting an input member rotatable about an input axis and an output member rotatable about an output axis and permitting an angle of flexure between the input axis and the output axis, said coupling defining a circumferential direction and comprising:
a first coupling half connectable to said input member and defining three connecting points angularly spaced by 120°;
a second coupling half connectable to said output member and defining three connecting points angularly spaced by 120°;
a star-shaped first intermediate element part having three radially outwardly extending arms angularly spaced by 120°, said first intermediate element part being disposed between said first and second coupling halves;
a first coupling set including three elongated, flexible connecting elements connected to said first coupling half at one of said connecting points each, extending in a first circumferential direction therefrom and connected to said first intermediate element part at one of said arms each, and further including three elongated, flexible connecting elements connected to said first intermediate element part at one of said arms each extending in said first circumferential direction therefrom and connected to said second

coupling half at a respective one of said three connecting points thereof;

an annular second intermediate element part having three radially inwardly extending lugs angularly spaced by 120°, said second intermediate element part being disposed between said first and second coupling halves surrounding said first intermediate element part; and

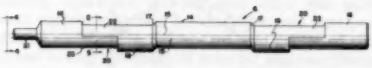
a second coupling set including three elongated flexible connecting elements connected to said first coupling half at one of said connecting points each, extending therefrom in a second circumferential direction opposite to said first circumferential direction and connected to said second intermediate element part at one of said lugs each, and further including three elongated, flexible connecting elements connected to said second intermediate element part at one of said lugs each, extending in said second circumferential direction thereform and connected to said second coupling half at a respective one of said three connecting points thereof.

4,460,346

ECCENTRIC SHAFT AND METHOD OF MANUFACTURE

Thomas L. Behnke, Durand, Mich., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed May 30, 1980, Ser. No. 149,164
Int. Cl.³ B65G *27/00*; F16C *3/18*
U.S. Cl. 464—179 **16 Claims**



1. In combination with an axially extending eccentric shaft having at spaced zones along its axial length a first cylindrical bearing section, a frame supported bearing journaling said bearing section; a second cylindrical coupling section forming another part of said shaft eccentric to said first section; a surface to be vibrated; a bearing enclosing said coupling section connecting with said surface, and a section of substantially elliptical cross-section between said first and second sections having a major and minor axis of differing length, said elliptical section major axis being no greater in length than the diameter of either of said cylindrical sections.

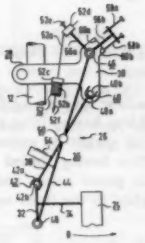
4,460,347

MECHANISM FOR ADJUSTING THE POSITION OF A BICYCLE CHAIN

Eduard Bergles, Graz, Austria, assignor to Fichtel & Sachs AG

Filed Oct. 22, 1980, Ser. No. 199,478
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 7930350[U]
The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.
Int. Cl.³ F16H *9/00, 11/00*
U.S. Cl. 474—82 **27 Claims**

1. Mechanism for adjusting the position of a bicycle chain on a bicycle comprising a bicycle frame, a foot pedal drive having a foot pedal axis mounted on said bicycle frame, at least two chain wheels including a first chain wheel and a second chain wheel concentrically mounted on the foot pedal axis, a support fixed to said frame adjacent said foot pedal drive, a device for moving a bicycle chain between the first and second chain wheels, a linkage system connected between said support and said device, means connected to said linkage system for deforming said linkage system, said linkage system being deformable in a plane substantially parallel to the foot pedal axis and comprising a first linkage head fixed to said support, a movable second linkage head spaced from said first linkage head and connected to said device, said second linkage head being movable approximately parallel to the foot pedal axis, an articulated lever having a first end and a second end with a first pivot joint connecting said first end to said first linkage head and a second pivot joint connecting said second end to said second linkage head, a guide member having a first end and a second end, a third pivot joint connecting said guide member to said first linkage head, a fourth pivot joint connecting said guide member to said second linkage head, a fifth joint pivotally connecting said articulated lever to said guide member, each of said first, second, third, fourth and fifth joints having an axis in spaced relation to one another and disposed substantially perpendicular to the plane of deformation of said linkage system, two of said joints being sliding joints affording linear displacement in the plane of deformation, stop means for limiting the displacement of said linkage system between two end positions in the plane of deformation thereof, said stop means comprises a pair of adjusting screws mounted on said guide member and



a pair of stop surfaces formed on said first linkage head with each of said adjusting screws being arranged to interact with a different one of said stop surfaces, said adjusting screws have their axes approximately parallel to one another and parallel to the plane of deformation of said linkage system, each of said adjusting screws having a tool engagement surface thereon with said tool engagement surface facing upwardly in the normal erect position of the bicycle, said adjusting screws are located laterally of the plane of said bicycle frame and the tool engagement surfaces thereof face away from the plane of said bicycle frame, a band-shaped elastic part encloses said adjusting screws with the ends of said band-shaped part being rolled for elastically enclosing said adjusting screws, and a plug connection for securing the portion of said band-shaped part between the rolled ends thereof to said guide member.

4,460,348

METHOD FOR PRODUCING A TWO-PIECE PAPER CONTAINER

Akira Iioka, Inzaimachi, and Shoichi Suzuki, Tokyo, both of Japan, assignors to Nihon Dixie Company Limited, Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 270,091
Claims priority, application Japan, Jun. 9, 1980, 55-77448
Int. Cl.³ B31B *1/64*
U.S. Cl. 493—108 **4 Claims**

1. A method for producing a two-piece container consisting of

blanking a container body wall member and a container bottom panel member from a base paper made of a stock containing about 10 to about 80% by weight of high-density polyethylene synthetic pulp;

fabricating the members into a container using a conventional cup-making machine; and

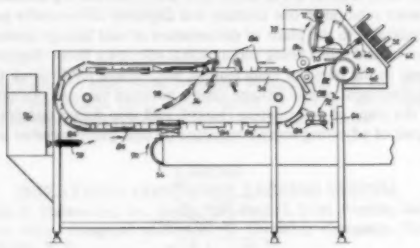
then increasing the water proofness, water-repellency or stiffness by heating the so-fabricated whole container at a temperature between 120° C. and about 300° C.

4,460,349

PAPERBOARD TRAY FORMING MACHINE

William Charron, Fremont, Calif., assignor to Manville Service Corporation, Denver, Colo.

Filed Apr. 26, 1982, Ser. No. 371,851
Int. Cl.³ B31B 3/02
U.S. Cl. 493—163 10 Claims



1. A tray forming machine for forming from a flat production blank a paperboard tray having front and rear end panels hingedly attached to side panels by means of folded gusset corner panels and further having folded over corner flaps hingedly attached to the gusset panels and upwardly turned top flaps hingedly attached to the front and rear end panels, comprising:

(a) a frame;

(b) a plurality of endless traveling mandrels carried by the frame and having releasing means positioned within the mandrels for releasing a formed tray at a pre-determined time;

(c) a sheet feeder, positioned above and in front of the traveling mandrels and attached to the frame, for feeding the flat production blank in one direction over the traveling mandrels;

(d) first means, positioned above the mandrel, for folding the front panel downward over the mandrel;

(e) second means, positioned above the mandrel for folding the rear panel downward over the mandrel as the mandrel advances;

(f) a first pair of gusset influencers, positioned on each side of the traveling mandrel, for influencing the front gusset corner panels of the traveling production blank;

(g) a second pair of gusset influencers, positioned on each side of the traveling mandrel and upstream from the first pair of gusset influencers, for influencing the rear gusset corner panels of the traveling blank;

(h) third means, positioned above the mandrel, for folding the side panels downward over the mandrel after the first and second pair of gusset influencers have influenced the front and rear gusset corner panels;

(i) a hot melt applicator, positioned on each side of the traveling mandrel for applying hot melt adhesive first to a portion of the front corner flaps and then to a portion of the rear corner flaps;

(j) a pair of plows, positioned on each side of the traveling mandrel, for turning outwardly the corner flaps and folding them against the side panels;

(k) a pair of conveyor belts positioned on each side of the traveling mandrel for holding the upwardly turned corner flaps tightly against the side panels until the previously applied hot melt adhesive has set;

(l) first means, positioned below the traveling mandrel for pre-breaking a portion of the front panel by positioning it at a pre-determined angle internally of the tray;

(m) second means, positioned below the traveling mandrel, for pre-breaking a portion of the rear panel by positioning it at a pre-determined angle internally of the tray;

(n) means, positioned in proximity to the mandrel, for activating the releasing means at a pre-determined time to remove the formed tray from the mandrel; and

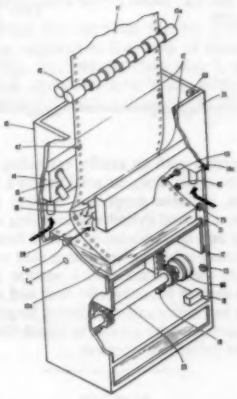
(o) means, positioned above the released formed tray for further pre-breaking the upwardly turned top flaps to a pre-determined position which permits a lid to be later positioned over the tray after it has been filled.

4,460,350

CONTINUOUS PRINTED PAPER STACKING DEVICE

Faquir C. Mittal, Audubon, and Joseph M. Curley, Lansdale, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 183,599, Sep. 2, 1980, abandoned. This application Nov. 8, 1982, Ser. No. 440,196
Int. Cl.³ B65H 45/00
U.S. Cl. 493—412 3 Claims



1. Apparatus for folding and stacking a continuous sheet of fold form paper which is provided with periodic seams comprising:

(a) means including air jets located on opposite sides of said fold form paper for emitting directional streams of air thereon;

(b) means for receiving said continuous sheet of paper after passing said air jets;

(c) means for detecting a position of said seams with respect to said air jets;

(d) means for activating said air jets for emitting opposed directional streams of air in response to a signal from said means for detecting a position of said seams, whereby synchronization with a passage of said seams opposite said air jets is effected to cause consecutive sheets to fold over one another for forming a uniform stack of paper on said receiver from said continuous sheet of paper; and

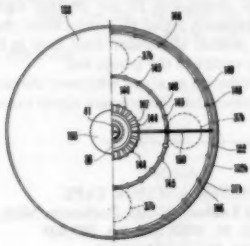
(e) means for remembering a last actuated one of said air jets, said means including an air jet sensor having solenoids and a plunger selectively moved into one of a pair of opposed openings in said air jet sensor in response to an associated one of said solenoids being energized, said plunger having a flag member operable with a light sensor for blocking a light beam detector carried by said light sensor.

4,460,351

ROTOR FOR A CENTRIFUGE

Hiizu Wakita, Tokyo, and Tadahiro Uchida, Sayama, both of Japan, assignors to Kabushiki Kaisha Kubota Seisakusho, Tokyo, Japan

Filed Jun. 24, 1982, Ser. No. 391,700
Claims priority, application Japan, Jul. 3, 1981, 56-104860
Int. Cl.³ B04B 5/02
U.S. Cl. 494—16 6 Claims



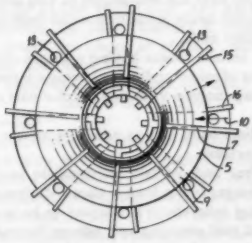
1. A rotor for a centrifuge, comprising a rotatable shaft, a disc-shaped bottom plate fixed to said rotatable shaft, and a holder plate mounted on said bottom plate for holding sedimentation tubes, said holder plate being integrally constructed of a thin plate and having a center, an outer edge, and a bent portion positioned between said center and outer edge and projecting upwardly between concentric flat portions in contact support with said bottom plate, said bent portion including a surface directed toward said center of the holder plate and having a plurality of holes for insertion therethrough of the sedimentation tubes, and said bottom plate having a plurality of holes aligned with said holes in said holder plate for receiving the sedimentation tubes therein including another holder plate for holding capillary tubes, said another holder plate being mountable on said bottom plate in place of said first mentioned holder plate, said bottom plate having an attachment including a shaft portion fitted in said another holder plate, said another plate having on an upper surface thereof a plurality of annular ridges having slots for receiving the capillary tubes in a radial pattern and wherein said another holder plate has a plurality of downward projections fitted respectively in said holes in said bottom plate.

4,460,352

CENTRIFUGE DRUM FOR CLARIFYING AND/OR SEPARATING LIQUIDS

Paul Bruning, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Jan. 18, 1983, Ser. No. 459,015
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3201866
Int. Cl.³ B04B 11/06, 11/08
U.S. Cl. 494—70 8 Claims



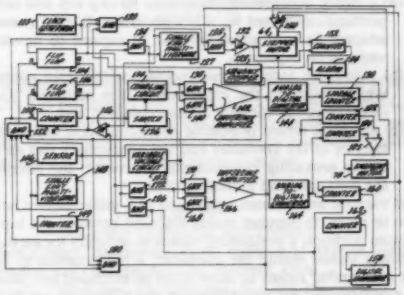
1. In a centrifuge drum for clarifying and/or separating liquids, having a beveled-plate insert comprising individual plates held apart by spacing strips and resting on a distributor foot, the bottom of which has channels through which the liquid to be centrifuged is introduced into a separation space in which there are ribs, the improvement comprising: means forming lifting channels between the ribs and wherein the channels of the distributor foot empty into the lifting channels.

4,460,353

DROP CONTROLLER

Clinton L. Deckert, Poway; Jon A. Jenkins, Rancho Santa Fe, and Larry L. Wilson, Poway, all of Calif., assignors to Imed Corporation, San Diego, Calif.

Filed Sep. 8, 1980, Ser. No. 185,378
Int. Cl.³ A61M 5/00
U.S. Cl. 604—31 34 Claims



1. In combination for controlling the passage of fluid drops through a drip chamber,

means for indicating the passage of the fluid drops through the drip chamber,

means defining the area of passage of the fluid drops through the drip chamber and adjustably positioned to control the size of the passage,

means for determining the period of time between the passage of each pair of successive fluid drops through the drip chamber,

means adjustably preset to provide a desired time period between the passage of each pair of successive fluid drops through the drip chamber,

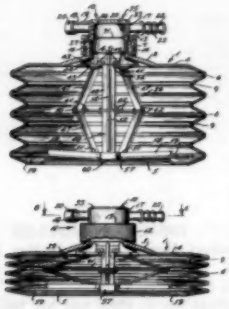
means for adjusting the position of the passage-defining means to compensate by a particular increment for each determined time period which is greater by a particular amount than the preset time period, and

means for adjusting the determined time period between the passage of each pair of successive fluid drops through the drip chamber in accordance with the adjustments in the position of the passage-defining means by a particular increment to provide for additional incremental adjustments in the position of the passage-defining means when the period of time between the passage of that pair of successive fluid drops through the drip chamber, after each adjustment of the time period determined for the passage of that pair of successive fluid drops through the drip chamber, still exceeds the preset time period.

4,460,354
CLOSED WOUND SUCTION EVACUATOR

Eugene E. Weilbacher, and Dean A. Ransom, both of New Philadelphia, Ohio, assignors to Snyder Laboratories, Inc., Dover, Ohio

Filed Jul. 8, 1980, Ser. No. 166,940
Int. Cl.³ A61M *1/06*
U.S. Cl. 604—73 **15 Claims**



1. A medical evacuator system for evacuating fluids from the body comprising in combination:

(a) a closed compressible container having top and bottom portions connected by a flexible sidewall, said container adapted to be compressed and to expand to develop a vacuum on expansion;

(b) a vacuum assist means disposed within said container which assists in the expansion of the container and in developing the vacuum in the container; and

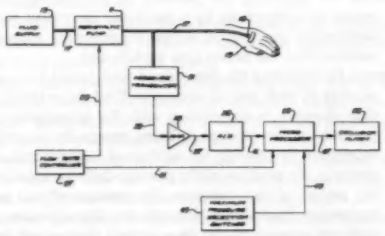
(c) an outlet means providing communication between the interior of the container and the atmosphere and an inlet means providing communication between the interior of the container and a drainage tube,

said vacuum assist means comprised of a spider device having two or more rib member means disposed between the top and bottom portions, a positioning means to securely locate the rib member means within the container, a hinge means to allow the rib member means to move from an extended rest position to a compressed activated position and a separate mechanical force means engaging exteriorly on said rib member means which mechanical force means acts in a direction substantially perpendicular to said flexible sidewall to return the rib member means to their extended rest position.

4,460,355
FLUID PRESSURE MONITORING SYSTEM

Douglas C. Layman, San Diego, Calif., assignor to IVAC Corporation, San Diego, Calif.

Filed Jun. 11, 1982, Ser. No. 387,672
Int. Cl.³ A61M *1/03*
U.S. Cl. 604—118 **21 Claims**



1. Pressure detection apparatus for use in a parenteral administration system of a type having a pump that cyclicly pumps a fluid through a feeding tube to a patient, each pumping cycle having a period of reduced fluid flow, and further having means for producing a control signal indicative of the timing of the period of reduced fluid flow in each pumping cycle, the apparatus comprising:

pressure transducer means for measuring the pressure of the fluid the pump is pumping through the feeding tube to the patient and for producing a corresponding pressure signal;

comparator means, responsive to the control signal, for comparing the pressure signal to a prescribed threshold only during the periods of reduced fluid flow in the successive pumping cycles of the pump; and

alarm means for producing an alarm whenever the comparator means determines that the pressure signal exceeds the threshold.

4,460,356
CATHETER ANCHOR TAPE

Douglas Moseley, 845 Ludlow - E-203, Rochester, Mich. 48063

Filed Feb. 10, 1982, Ser. No. 347,405
Int. Cl.³ A61M *25/02*
U.S. Cl. 604—180 **4 Claims**

1. A pre-cut anchor tape for securing a catheter to the body of a person, said catheter being of the type having a tubular part adapted for entry into the body and terminating in a coupling with a flexible tube extending from the coupling, said anchor tape comprising:

a unitary strip of tape of uniform width having an inner surface adapted to be placed against the body and having an outer surface adapted to receive the catheter thereon,

said strip of tape comprising a first side band, a second side band and an intermediate band,

said first side band having an adhesive on its inner surface for securing the strip to the body,

said intermediate band being separated from the first side and by first and second slits extending from the respective ends thereof toward the middle thereof and being joined to said first side band only by a first unitary hinge located near the mid-length of said strip,

said second side band being separated from the intermediate band by third and fourth slits extending from the respective ends thereof toward the middle thereof and being joined to said intermediate band only by a second unitary hinge located near the mid-length of said strip,

each of said bands being of uniform width from its respective hinge to either end,

said first and second hinges having a length about equal to the diameter of said coupling and being adapted to receive said coupling thereon with said tubular part inserted into said body,

said intermediate band having adhesive on one of its outer and inner surfaces,

each of the free ends of said intermediate band extending from said hinges being longer than the circumference of said coupling whereby it is adapted to be wrapped halfway around said coupling and adhere thereto and to the body to secure said catheter to the body,

said second side band having adhesive on one of its outer and inner surfaces,

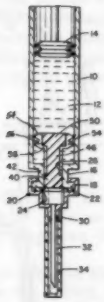
and each of the free ends of the said second side band being adapted to be adhered to the body to further secure the catheter to the body wherein at least one of said intermediate band and said second side band has adhesive on its outer surface.

4,460,357

FLUID DISPENSING DEVICE

Milton J. Cohen, 10823 Burbank Dr., Potomac, Md. 20854

Filed Jun. 25, 1982, Ser. No. 392,020
Int. Cl.³ A61M 5/00
U.S. Cl. 604—238 **7 Claims**



1. A device for dispensing a fluid maintained in sealed relation therein comprising an elongate barrel having an open end and a cylindrical bore of lesser cross section in the end portion of the barrel leading to the open end, a hollow needle, a hub member secured at one end about the open end of the barrel and at the other end for mounting one end of the hollow needle, and a portion intermediate said end defining a chamber having a cross section greater than the cross section of the bore and in direct communication therewith, a plunger dimensioned slidably to engage the interior of the barrel in sealing relation, a sealing disc within said bore dimensioned to engage the walls of said bore in sealing relation and axially slidable in said bore between a sealing position to seal off the space between said sealing disc and plunger and unsealing position to permit flow of fluid from the barrel to said chamber and to the hollow needle in communication therewith, a stem extending centrally upwardly from the sealing disc and dimensioned to have a cross sectional area less than the cross sectional area of the bore to provide a space therebetween, an abutment on the end of the stem spaced from the sealing disc by an amount greater than the length of the bore, the width of said abutment being substantially equal to the inner dimension of said barrel, and means for displacement of the plunger within the barrel.

4,460,358

COMBINED LOAD AND LATCH MECHANISM FOR FLUID FLOW CONTROL APPARATUS

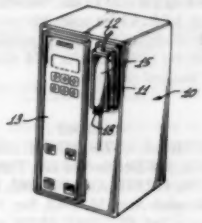
Alvis J. Somerville, San Diego; Richard B. Conley, Jamul, and Robert B. Truitt, San Diego, all of Calif., assignors to IVAC Corporation, San Diego, Calif.

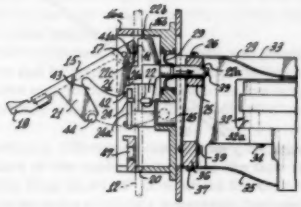
Filed Nov. 7, 1980, Ser. No. 204,772
Int. Cl.³ A61M 5/00
U.S. Cl. 604—250 **19 Claims**

1. In a fluid flow control apparatus for controlling the parenteral administration of liquids through a feeding tube from a liquid source to a patient, the combination comprising:

electromechanical output means for manipulating the feeding tube to vary the flow of liquid in the feeding tube, said output means including biasing means for applying a bias force normally urging said output means to a position for engagement with the feeding tube; and

a latch mounted for movement between an open position and a closed position, said latch in said open position urging said output means to a position for disengagement with the feeding tube, and said biasing means urging said output means to automatically return to said position for





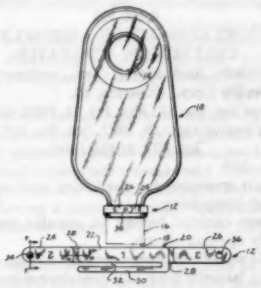
engagement with the feeding tube upon movement of said latch to said closed position, said latch further including a wall defining one side of a channel for capturing the feeding tube in position for manipulation by said output means when said latch is in said closed position.

4,460,359

CLAMP CLOSURE ASSEMBLY

Leonard Fenton, Beachwood, Ohio, assignor to Marlen Manufacturing and Development Co., Bedford, Ohio

Filed Apr. 14, 1982, Ser. No. 368,363
Int. Cl.³ A61M 31/00, 1/00
U.S. Cl. 604—277 **5 Claims**



1. A clamp closure assembly means for the lower end opening portion of an ostomy bag, comprising a flat, rectangular, elongated strip of stiffly flexible plastic material, said strip having a centrally located winding portion including at least one outside edge and a pair of flat, rectangular closure wings integral with and extending from the ends of said winding portion, each wing being hinged to said winding portion by thinned zones of separation so that said wings may be folded to overlie said winding portion, slot means adjacent said winding portion to receive a lower end opening portion of an ostomy bag so that said portion may be wound about said winding

portion, means on each wing for attaching said wings together in a substantially superposed stacked position to overlie the winding portion and clamp the lower end portion of the bag after it has been wound against the winding portion of said strip, finger means separated from the winding portion by said slot means extending parallel to said outside edge for insertion of an ostomy bag, said closure assembly means being movable between an open condition for bag engagement and disengagement and a clamping position with said wings being attached together in said stacked position.

4,460,360

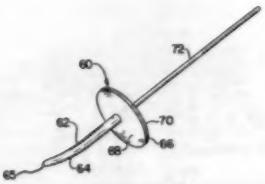
URETHRAL ANESTHETIC DEVICES

Aaron N. Finegold, 136 Beechwood La., Pittsburgh, Pa. 15206

Division of Ser. No. 412,985, Aug. 30, 1982, Pat. No. 4,432,758. This application Aug. 24, 1983, Ser. No. 525,989

Int. Cl.³ A61F *15/00*

U.S. Cl. 604—288 **4 Claims**



1. Apparatus for applying a local anesthetic to the interior of a patient's urethra comprising:

(a) a metal obstructor with one substantially flat surface;

(b) an elongated solid anesthetic suppository attached to and extending outwardly from said flat surface of said metal obstructor, said suppository formed in the shape of an anatomical female infrapubic curve and said suppository having a length substantially equal to the length of the patient's urethra; and

(c) a handle attached to another surface of said obstructor opposite said flat surface and extending outwardly therefrom, whereby said suppository may be inserted into the patient's urethra and thereby anesthetize the entire urethra as said suppository is dissolved by the patient's body heat.

4,460,361

VACUUM PORT CONNECTOR ASSEMBLY ON FLUID COLLECTION APPARATUS

Robert L. Nichols, Jacksonville, Tex., assignor to American Hospital Supply Corp., Evanston, Ill.

Continuation of Ser. No. 173,885, Jul. 31, 1980, abandoned. This application Oct. 20, 1982, Ser. No. 435,384

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—319 **1 Claim**

1. A suction apparatus for suctioning and collecting fluid from a patient comprising:

a rigid outer canister having an annular rim defining an upwardly opening mouth;

a disposable semi-rigid inner container having an annular lip extending laterally from said container sidewall and overlying a portion of said canister rim, said container removably disposed within said canister and supported from the top of said canister with a space between the sidewalls of said canister and said container;

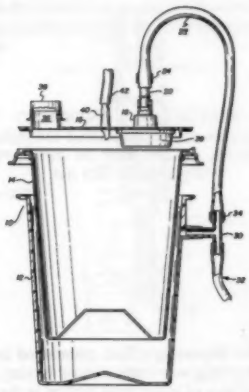
a removable cover for said canister and container having formed therein an inlet port for receiving fluid from the body of a patient, and a vacuum port for effecting a vacuum within said container for drawing fluid through said inlet port for collection in said container;

an inlet line;

a vacuum line;

a tee connection attached directly to the rigid outer canister and communicating with the interior of the rigid outer canister to allow easy disconnection and reconnection of the vacuum line to the vacuum source;

a flexible autoclavable vacuum leader line having first and second ends and having a length for extending between said tee connection and said vacuum port, said tee connection and said vacuum port, said first end being permanently attached to said tee connection and said second end having detachable vacuum coupling means for attaching said second end to the vacuum port, such that a vacuum applied to said tee from the vacuum line is applied to the exterior and interior of the inner liner;



said vacuum coupling means including a male-type connector attached to said second end of said vacuum leader line and said vacuum port including a female-type connector, said male connector being dimensioned to interfit with said female-type connector and being inoperable to couple said vacuum leader line to said inlet port; and

inlet coupling means for attaching the inlet line to the inlet port, said inlet coupling means being inoperable to couple the inlet line to the vacuum port, said inlet coupling means being readily distinguishable from said vacuum coupling means such that attempts to miscouple are minimized.

4,460,362

DRAINAGE SYSTEM WITH HOLDING CHAMBER

David A. Bates, Libertyville, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jul. 21, 1982, Ser. No. 400,518

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—323 **11 Claims**

1. A drainage system for body fluids, comprising:

a receptacle having a collection chamber for retaining the body fluids;

a container having a supply chamber;

a bactericide in the supply chamber;

means defining a holding chamber;

first one-way valve means permitting the passage of bactericide from the supply chamber into the holding chamber, and for preventing passage of the bactericide from the holding chamber into the supply chamber; and

second one-way valve means for permitting passage of the bactericide from the holding chamber into the collection chamber, and for preventing passage of the contents from the collection chamber into the holding chamber, wherein the receptacle includes a drainage tubular section of flexible material, and including clamp means for opening the tubular section while the first valve means is open, and for closing the tubular section while the second valve means is open.

4,460,363

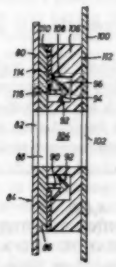
OSTOMY BAG

Peter L. Steer, and John V. Edwards, both of East Grinstead, England, assignors to Kingsdown Medical Consultants, Ltd., London, England

Continuation of Ser. No. 881,274, Feb. 27, 1978, abandoned. This application Jul. 2, 1982, Ser. No. 394,659

Int. Cl.³ A61F *5/44*

U.S. Cl. 604—336 **29 Claims**



27. An ostomy appliance comprising a pad or dressing having a body contacting surface and an outer surface with an aperture for passage of the stoma extending through said pad or dressing, a coupling member extending outwardly from said pad or dressing and encircling the intersection of said aperture and the outer surface of said pad or dressing and an ostomy bag also having an aperture in one bag wall for passage of the stoma with a second coupling member affixed to said bag wall around the periphery of said bag wall aperture and extending outwardly from said bag wall, said bag coupling member being two opposed walls of closed loop channel form and said pad or dressing coupling member being a closed loop form having a rib or projection dimensioned to be gripped between the opposed channel walls when said coupling members are connected, and a thin resilient seal strip extending at an angle radially inward from an inner surface of said rib or projection which engages the outer surface of said inner channel wall and wherein said rib or projection has a peripheral bead extending therefrom in a direction opposite said deflectible seal strip and said outer channel wall has a complementary bead on its inner surface, each of said two beads having an annular surface inclined to the common axis of said coupling members when connected, the arrangement being such that said two annular surfaces are in face-to-face contact when said two members are in their mutually coupled positions.

4,460,364

PRESSURE SENSITIVE HOT MELT ADHESIVE FOR SANITARY PRODUCTS

Franklin M. C. Chen, Kendall Park, and Archie L. Jones, Somerset, both of N.J., assignors to Personal Products Company, Milltown, N.J.

Filed Aug. 26, 1982, Ser. No. 411,931

Int. Cl.³ A61F *13/16*; C08L *53/00*

U.S. Cl. 604—387 **6 Claims**

1. A hot melt pressure sensitive adhesive composition comprising:

an A-B-A- block copolymer wherein said B midblock comprises polyolefins and said A endblock comprises polystyrene and having a number average molecular weight of the individual A blocks of from about 7,000 to about 30,000;

a tackifying resin present in the proportions of from about 200 to about 300 parts by weight per 100 parts by weight of said block copolymer;

a plasticizer present in the proportions of from about 80 to about 150 parts by weight per 100 parts by weight of said block copolymer;

said block copolymer, tackifying resin, and plasticizer, being chosen and being present in the proportions such that said adhesive composition has a glass transition temperature of the rubbery phase ranging from about 0° C. to about 10° C.;

a temperature difference between the glass transition temperature of the rubbery phase and the flow temperature ranging from about 45° C. to about 55° C.;

a storage modulus which is a monotonic decreasing function of temperature between the glass transition temperature of the rubbery phase and the flow temperature, said storage modulus having a value, at the arithmetic average temperature between the glass transition temperature of the rubbery phase and the flow temperature of from about 3.5×10^5 to 6.5×10^5 dynes/cm^2; and

the function $\log_{10}$ of the storage modulus verses temperature at a temperature equal to the arithmetic average of the glass transition temperature of the rubbery phase and the flow temperature having a slope of from about −0.005 to about −0.025 where the temperature is in degrees centigrade and the storage modulus is in dynes/cm^2; and

said adhesive composition exhibiting a viscosity reduction of less than 5% when maintained at 350° F. for ninety hours;

whereby said pressure-sensitive adhesive will exhibit a high equilibrium peel strength and a low adhesive transfer upon peeling.

6. A sanitary napkin for adhering to the crotch portion of an undergarment comprising an absorbent body for absorbing body fluids and having a body facing side and a garment facing side;

a layer of hot melt pressure-sensitive adhesive composition overlying the at least a portion of the garment facing side;

said hot melt pressure-sensitive adhesive comprising:

an A-B-A- block copolymer wherein said B midblock comprises polyolefins and said A endblock comprises polystyrene and having a number average molecular weight of the individual A blocks of from about 7,000 to about 30,000;

a tackifying resin present in the porportions of from about 200 to about 300 parts by weight per 100 parts by weight of said block copolymer;

a plasticizer present in the proportions of from about 80 to about 150 parts by weight per 100 parts by weight of said block copolymer;

said block copolymer, tackifying resin, and plasticizer, being chosen and being present in the proportions such that said adhesive composition has a glass transition temperature of the rubbery phase of about 0° C. to about 10° C.;

a temperature difference between the glass transition temperature of the rubbery phase and the flow temperature of about 45° C. to about 55° C.;

a storage modulus which is a monotonic decreasing function

of temperature between the glass transition temperature of the rubbery phase and the flow temperature, said storage modulus having a value, at the arithmetic average temperature between the glass transition temperature of the rubbery phase and the flow temperature of about 3.5×10^5 to 6.5×10^5 dynes/cm^2; and

the function $\log_{10}$ of the storage modulus verses temperature at a temperature equal to the arithmetic average of the glass transition temperature of the rubbery phase and the flow temperature having a slope of from about -0.005 to about -0.025 where the temperature is in degrees centigrade and the storage modulus is in dynes/cm^2; and

said adhesive composition exhibiting a viscosity reduction of less than 5% when maintained at 350° F. for ninety hours;

whereby said sanitary napkin may be applied to said undergarment and will exhibit a high equilibrium peel strength and a low adhesive transfer upon removal.

4,460,365

POLYURETHANE BAG FOR BLOOD

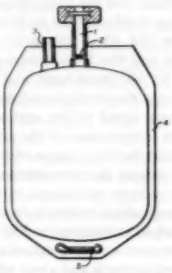
Karlheinz Gänshirt, Dreieich; Wolfram H. Walker, Ober-Roden, and Hans Schleussner, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Biotest-Serum Institute GmbH, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 813,368, Jul. 6, 1977, abandoned. This application Oct. 1, 1979, Ser. No. 80,622

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1976, 7621615[U]

Int. Cl.³ A61F *1/24*

U.S. Cl. 604—408 **4 Claims**



1. A bag suitable for the storage, deep-freezing and transfusion of blood and blood components and infusion solutions formed of a calendered or extruded foil of plasticizer free polyurethane of a thickness of about 0.1–0.5 mm, a Shore hardness A of about 60–85, temperature resistance up to about 160° C. and down to about −196° C. without change of properties.

4,460,366

MEDICAL BAG

Koji Shinno, Fujinomiya, Japan, assignor to Terumo Corporation, Tokyo, Japan

Division of Ser. No. 425,889, Sep. 28, 1982, Pat. No. 4,425,177. This application Oct. 3, 1983, Ser. No. 538,198

Claims priority, application Japan, Mar. 26, 1982, 57-48258

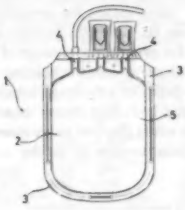
Int. Cl.³ A61M *5/00*

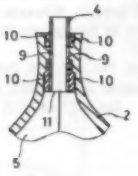
U.S. Cl. 604—408 **7 Claims**

1. In a medical bag comprising two transparent or translucent sheets joined together at their peripheral edges in a sealing manner and having a liquid charging/discharging tube welded between the joined edges of said sheets so as to provide a fluid communication between the interior and exterior of said bag, the improvement wherein:

the welded sealing portion between said tube and said sheets comprises a high-frequency-weld primary weld region located substantially at the center of said welded sealing portion as viewed in the longitudinal direction of said welding sealing portion, and secondary weld regions located at both sides of said primary weld region as viewed in the longitudinal direction of said welded sealing portion;

parts of molten materials of said sheets and said tube formed at said primary weld region due to said high-frequency





welding flowing outwardly into said secondary weld regions; and

materials from said primary weld region filling the gap at each of said secondary weld regions between said tube and said sheets which are in a half-molten state, without substantially flowing beyond each marginal edge of said welded sealing portion between said tube and said sheets.

4,460,367

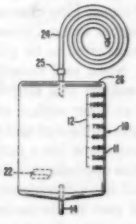
DEVICE CONTAINING BIOCIDE PRODUCING PARAFORMALDE AND AN ACID

Patrick S. Wong, Kowloon, Hong Kong; Jimmy B. Langston, San Jose, and Harold M. Leeper, Mountain View, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 137,538, Apr. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 78,507, Sep. 24, 1979, Pat. No. 4,241,733, which is a division of Ser. No. 804,962, Jun. 9, 1977, Pat. No. 4,193,403. This application Jul. 12, 1982, Ser. No. 397,462

Int. Cl.³ A61F *5/44*

U.S. Cl. 604—890 **3 Claims**



1. A device for dispensing a biocide to an environment of use, the device comprising: a body shaped, sized and adapted for placement in the environment and has at least one surface

for dispensing biocide from the device, said body formed of a polymeric material that is substantially stable in the environment and houses paraformaldehyde and an acid that is a member selected from the group consisting of inorganic, organic and Lewis acids, which acid generates an acidic state in the device for assisting in converting paraformaldehyde to the biocide formaldehyde, which is dispensed from the device to the environment of use.

4,460,368

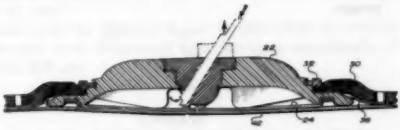
TRANS-DERMAL MEDICATION SYSTEM

Kenneth C. Allison, Crystal Lake; Roger D. Allison, Bensenville, and Charlotte C. Allison, Crystal Lake, all of Ill., assignors to Almedco, Inc., Crystal Lake, Ill.

Continuation-in-part of Ser. No. 316,347, Oct. 29, 1981, abandoned. This application Jan. 20, 1983, Ser. No. 459,499

Int. Cl.³ A61M *7/00*

U.S. Cl. 604—896 **31 Claims**



1. A medication application system for the sustained administration of acetyl salicylic acid transdermally through an area of unbroken skin, comprising

a medication container including medication impermeable housing means forming a generally concave shaped cavity open on one side and having flange means extending radially outward from the periphery of said cavity opening and integral with said housing means, said flange means having an annular depression therein on the side of said flange means nearest said concave cavity opening,

medication permeable micro-porous membrane means secured in said annular depression of said flange means of said housing means and covering the open side thereof to thereby form a medication holding container permeable on one side only to the passage of medication, means secured to said housing for adhering said medication holding container to the skin of a patient, and

acetyl salicylic acid in an aqueous saline solution providing a positive driving force in said medication holding container, said acetyl salicylic acid being in a concentration to provide a sustained analgesic and anti-inflammatory action.

4,460,369

ADHESIVE-COATED SHEET MATERIAL INCORPORATING ANTI-BACTERIAL SUBSTANCES

Donald E. Seymour, Hertfordshire, England, assignor to Smith & Nephew Research Ltd., England

Continuation of Ser. No. 198,106, Jul. 11, 1980, Pat. No. 4,340,043. This application Dec. 21, 1981, Ser. No. 332,446

Claims priority, application United Kingdom, Nov. 17, 1978, 45058/78

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.³ A61F *13/00*

U.S. Cl. 604—897 **28 Claims**

1. An adhesive bacteria-proof wound dressing which in use consists essentially of a polyurethane sheet material which is 40 microns or less in thickness which has upon one surface a continuous layer of adhesive comprising a polyvinyl ether adhesive or an acrylic adhesive up to 75 microns in thickness which adhesive has incorporated in it in uniform known amount per unit area a solid antibacterial material in a finely divided form in an amount of from 1 to 25% by weight based on the weight of the adhesive so that the dressing is liquid impervious but has high moisture vapour permeability and releases the antibacterial material in an amount sufficient to kill bacteria in the wound and surrounding covered skin area.

4,460,370

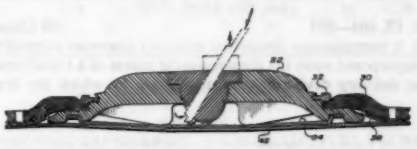
TRANS-DERMAL MEDICATION APPLICATION CELL

Kenneth C. Allison, Crystal Lake; Roger D. Allison, Bensenville, and Charlotte C. Allison, Crystal Lake, all of Ill., assignors to Almedco, Inc., Crystal Lake, Ill.

Continuation of Ser. No. 316,347, Oct. 29, 1981, abandoned. This application Dec. 16, 1982, Ser. No. 450,559

Int. Cl.³ A61M *7/00*

U.S. Cl. 604—897 **19 Claims**



1. A medication container comprising medication impermeable housing means forming a generally concave shaped cavity open on one side and having flange means extending radially outward from the periphery of said cavity opening and integral with said housing means, said flange means having an annular depression therein on the side of said flange means nearest said concave cavity opening,

medication permeable micro-porous membrane means secured in said annular depression of said flange means of said housing means and covering the open side thereof to thereby form a medication holding container permeable on one side only to the passage of medication,

means secured to said flange means of said housing means and extending generally outwardly therefrom and adapted for adhering said medication holding container to the skin of a patient,

strippable release sheet means secured to said skin adhering means extending radially outward from the periphery of said medication container, and

medication impermeable vapor barrier means sealingly adhered to said release sheet means and extending over said micro-porous membrane means to thereby block exterior access to said micro-porous membrane and prevent the escape of any medication from said container.

4,460,371

SILICONE PRESSURE SENSITIVE ADHESIVE AND USES

Herman Abber, Brockton, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation-in-part of Ser. No. 324,362, Nov. 24, 1981, abandoned. This application Dec. 20, 1982, Ser. No. 451,625

Int. Cl.³

U.S. Cl. 604—897 **14 Claims**

1. A combination of a medical device to be placed in adhesive contact with the skin and a pressure sensitive adhesive at least partially coated on said device, the adhesive permitting passage of medicinal liquids therethrough, said adhesive comprising:

the polymerization product of a mixture of reactants comprised of a linear methyl/phenyl polysiloxane gum, comprising dimethyl diphenyl polysiloxane,

a linear dimethyl polysiloxane gum, and

an MQ organopolysiloxane comprising monofunctional and quadrifunctional siloxane units,

the adhesive permitting passage of nitroglycerine therethrough at a substantially constant rate of at least 30 mg./hr./cm^2 as measured over a 27-hour period with the

adhesive having a thickness of about 1.0–3.5 mil and permitting at least 90 percent of the adhesive surface of the transdermal device in contact with the skin to remain adhesive after 24 hours.

4,460,372

PERCUTANEOUS ABSORPTION ENHANCER DISPENSER FOR USE IN COADMINISTERING DRUG AND PERCUTANEOUS ABSORPTION ENHANCER

Patricia S. Campbell, and Santosh K. Chandrasekaran, both of Palo Alto, Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 235,068, Feb. 17, 1981, Pat. No. 4,379,454. This application Apr. 1, 1983, Ser. No. 481,209

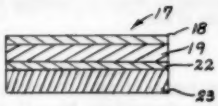
Int. Cl.³ A61M 7/00

U.S. Cl. 604—897 **11 Claims**

1. A percutaneous absorption enhancer dispenser adapted to be superposed upon the drug reservoir means of a transdermal drug delivery device to control the rate by which the drug within said reservoir means is absorbed through the skin, said enhancer dispenser comprising, in combination:

(a) percutaneous absorption enhancer reservoir means; and

(b) percutaneous absorption enhancer release rate controlling means for maintaining substantially constant, the rate at which said percutaneous absorption enhancer is released through the surface of said percutaneous absorption enhancer dispenser adapted to contact said drug reservoir means.



4,460,373

PARTICULATE DETERGENT COMPOSITION AND METHOD FOR CLEANING FABRICS

Stuart W. Beavan, Birkenhead, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 248,587, Mar. 27, 1981, abandoned. This application Jul. 29, 1982, Ser. No. 402,886

Claims priority, application United Kingdom, Apr. 11, 1980, 8012042; Apr. 11, 1980, 8012045

The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.

Int. Cl.³ D06L *3/04, 3/06*

U.S. Cl. 8—103 5 Claims

1. A method of laundering and bleaching fabrics comprising the steps of

(a) contacting the fabric with an aqueous liquor comprising from 0.5 to 10 g/l of a composition containing 5 to 99.5% by weight of a detersive surfactant including a builder in an amount up to 80% by weight and 0.1% to 40% by weight of a chlorite, the aqueous liquor having a pH of 8.5–11; and

(b) irradiating the aqueous liquor or the fabric in contact therewith with ultra-violet light having a wavelength of 200 to 400 nm.

4,460,374

STABLE COMPOSITION FOR TREATING TEXTILE SUBSTRATES

Heinz Abel, Reinach; Carl Becker, Basel, and Paul Schäfer, Rieben, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,706

Claims priority, application Switzerland, Feb. 12, 1981, 940/81; May 26, 1981, 3439/81; Oct. 30, 1981, 6946/81

Int. Cl.³ D06P *1/90, 1/653;* C09K *11/60*

U.S. Cl. 8—501 27 Claims

1. A process for whitening a textile, comprising the step of applying to the textile in an aqueous medium a composition which comprises

(a) an organic solvent which is sparingly soluble to insoluble in water and in which component (b) is dissolved and component (c) is dissolved or dispersed,

(b) a vehicle for component (c) which is sparingly soluble to insoluble in water, and

(c) a fluorescent whitening agent which is sparingly soluble to insoluble in water and which is soluble or dispersible in the vehicle (b).

4,460,375

DYEING-STABLE MONOAZO DYESTUFF, A PROCESS FOR ITS PREPARATION, AND ITS USE

Karl Sommer, Königstein; Manfred Schneider, Eppstein, and Rudolf Schickfluss, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

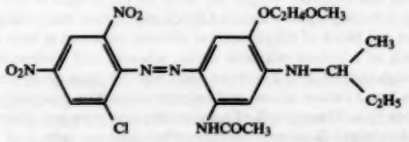
Filed Nov. 14, 1983, Ser. No. 551,271

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242309

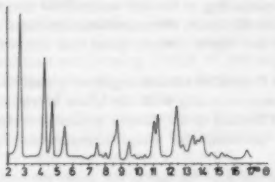
Int. Cl.³ D06P *67/02*

U.S. Cl. 8—526 4 Claims

1. The dyeing-stable modification (β-modification) of the dyestuff of the formula



which has the X-ray diffraction diagram shown in FIG. 1 and having the characteristic reflections at the following glancing angles and relative intensities:



[θ]	2.74	4.27	4.70	5.50	8.74	11.24	12.44
relative intensity	100	72	40	23	27	32	26

4,460,376

METHOD OF RECOVERING HIGH-GRADE FUEL FROM SOLID MINERAL-FUEL RAW MATERIAL

Per A. H. H. Fahlström, Åkersberga; Erik G. Blick, Helsingborg; Sten C. Svemar, Upplands Väsby, and Bruno C. Wallstén, Sollentuna, all of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE80/00104, 371 Date Dec. 11, 1980, 102(e) Date Nov. 26, 1980, PCT Pub. No. WO80/02152, PCT Pub. Date Oct. 16, 1980

PCT Filed Apr. 10, 1980, Ser. No. 224,569

Claims priority, application Sweden, Apr. 11, 1979, 7903249

Int. Cl.³ C10L *5/00*

U.S. Cl. 44—1 B 9 Claims

1. In a method of recovering high-grade, preferably sulphur-free fuel from bituminous or pyrobituminous mineral-fuel material, such as coal, oil shale and alum shale, wherein the raw material is finely divided into a sufficiently fine particle size for freeing the major part of bituminous or pyrobituminous raw material particles from ash-forming mineral particles, the improvement comprising separating the finely divided raw mineral into a mineral fuel purified from ash-forming minerals, a mineral fuel containing ash-forming minerals and a residual product comprising mainly ash-forming minerals, combusting said mineral fuel containing ash-forming mineral to form a binder and thereafter adding said binder to the residual product so as to hydraulically bind said product to a durable agglomerate form.

4,460,377

CONTAINER FOR COMBUSTIBLE

Dennis G. S. Kalil, Johannesburg, South Africa, assignor to Ghalil Trevor Kalil and Donald Joseph Deeb, both of Johannesburg, South Africa

Filed May 24, 1982, Ser. No. 381,337

Claims priority, application South Africa, May 26, 1981, 81/3511

Int. Cl.³ C10L *11/06*

U.S. Cl. 44—40 9 Claims

9. A combustible pack comprising:

(a) a container having a hollow interior, a top wall, a bottom wall, front and rear walls and side walls between the front and rear walls,

(b) dividing means extending across the interior of the container separating the interior into upper and lower compartments, the divider means being bent about a line in a medial region thereof so that the lower compartment is generally triangular in shape,

(c) flue means in the upper compartment and comprising a pair of spaced parallel strips extending between the divider means and a top wall of the container and incorpo-

rating the briding piece, holding the strips apart from each other and abutting the top wall, the lower ends of the strips being bent outwards and resting upon the divider means extending to the side walls of the container, igniting means in the lower compartment, combustible fuel material in the upper compartment but not within the flue means,

(d) a port formed in a lower region of a wall of the container and communicating with the lower compartment.

(e) a port formed in the divider means providing communicating between the lower compartment and the flue means,

(f) at least one port formed in the upper part of the container communicating with the upper part of the flue means.

4,460,378

PROCESS FOR THE PRODUCTION OF A "FUEL GRADE" MIXTURE OF METHANOL AND HIGHER ALCOHOLS

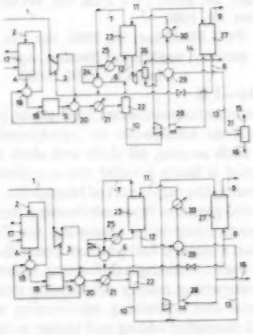
Raffaele Di Pietro, Milan; Alberto Paggini, Spino D'Adda, and Vincenzo Lagana', Milan, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Continuation of Ser. No. 269,709, Jun. 2, 1981, which is a continuation-in-part of Ser. No. 215,173, Dec. 11, 1980, abandoned. This application Jul. 18, 1983, Ser. No. 514,546

Claims priority, application Italy, May 16, 1980, 22117 A/80

Int. Cl.³ C10L 1/18

U.S. Cl. 44—54 **16 Claims**



1. In a process for producing fuel grade mixtures of methanol and higher alcohols, which process comprises:

(a) feeding a gaseous mixture, consisting essentially of carbon monoxide and hydrogen to a synthesis reactor operating at a temperature of from 200° to 500° C. and at a pressure higher than 30 atm to form an intermediate product; and

(b) cooling the intermediate product consisting of methanol, higher alcohols, water and unreacted gases,

the improvement which comprises:

(a^1) subjecting the cooled intermediate product to the conversion reaction

$$CO+H_2O \rightarrow CO_2+H_2,$$

operating said conversion process at a temperature of 150° to 250° C. and at the same pressure of the synthesis reactor to form a reaction product consisting essentially of methanol, higher alcohols, unreacted gases, carbon dioxide and traces of water;

(b^1) cooling the reaction product to form liquid phase consisting essentially of the fuel mixture and a gaseous phase consisting essentially of CO, H_2 and CO_2;

(c^1) separating the gaseous phase and then passing it into an absorption section for the elimination of CO_2, the gases so purified being in part recycled and in part let off to avoid the accumulation of inert matter;

(d^1) sending the liquid phase to a stripping section to remove the gases dissolved therein, the let off gases of step (c^1) being used as stripping agents; and

(e^1) sending the liquid phase so purified to the absorption section where it is utilized as an absorbing liquid.

4,460,379

STABILIZED MIDDLE DISTILLATE FUEL COMPOSITION

William M. Sweeney, Wappingers Falls; Rodney L. Sung, Fishkill, both of N.Y., and Wheeler C. Crawford, Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

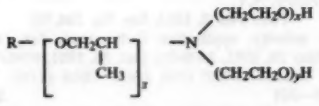
Filed Aug. 30, 1982, Ser. No. 412,621

The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.

Int. Cl.³ C10L 1/22

U.S. Cl. 44—56 **8 Claims**

1. A middle distillate fuel composition comprising a mixture of hydrocarbons boiling in the range from about 400° F. to about 650° F. and an effective sediment inhibiting amount of a hydrocarbyl polyoxypropylene di(polyoxyethylene) amine having the following formula:



wherein R is a hydrocarbyl radical having 1 to 50 carbon atoms and x and y have values from 1 to 16 and the sum of x plus y is from 2 to about 17, and z is from 1 to about 20.

4,460,380

WATER SHEDDING AGENTS IN DISTILLATE FUEL OILS

David H. Rehrer, Westfield, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 27, 1982, Ser. No. 453,235

Int. Cl.³ C10L 1/28

U.S. Cl. 44—62 **5 Claims**

1. A petroleum fuel oil comprising a major proportion of a distillate oil boiling in the range of about 120° to 500° C., about 0.001 to 0.5 weight %, based on the weight of said oil, of a wax crystal modifier which is a copolymer of ethylene and a monoethylenically unsaturated ester having a total of 3 to 20 carbon atoms, said ethylene copolymer having a number average molecular weight in the range of about 500 to 50,000 and a relative molar ratio of about 3 to 40 molar proportions of ethylene per molar proportion of said unsaturated ester; and about 0.0001 to 0.1 weight %, based on the weight of the oil, of a dehazing agent which is a block copolymer comprising at least one block of dihydrocarbyl siloxane units and at least one block of a polyoxyalkylene oxide, wherein said hydrocarbyl groups contain 1 to 8 carbons each, said alkylene groups contain 2 or 3 carbon atoms, said polymer consisting essentially of about 10 to 90 weight % of polyoxyalkylene units and about 90 to 10 weight % of said dihydrocarbyl siloxane units, and the number of silicon atoms per average molecule ranges from about 2 to 2000.

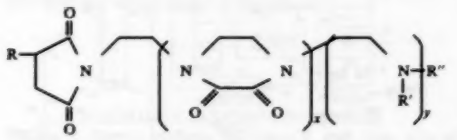
4,460,381

PROCESS FOR STABILIZING FUELS AND STABILIZED FUEL PRODUCED THEREBY

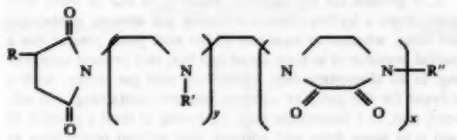
Thomas J. Karol, Wappingers Falls, and Rodney L. Sung, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed May 11, 1983, Ser. No. 493,557
Int. Cl.³ C10L 1/22
U.S. Cl. 44—63 7 Claims

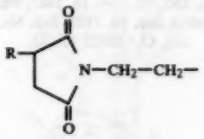
1. A process for stabilizing middle distillate and diesel fuels which comprises blending with said fuels from 10 to 100 parts per thousand barrels of at least one mono- or bis-imide oxamide of the formulas



and



in which R is a hydrocarbyl radical having from 8 to 400 carbon atoms, x and y are numbers range from 0 to 6 whose additive total is from 1 to 6, R′ is a hydrogen radical or a mono-, or bi-acyl radical of oxalic acid, and R″ is a hydrogen or hydrocarbyl substituted succinic-N-ethylene radical having the formula:

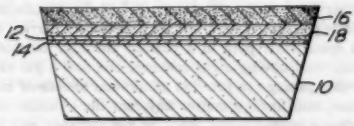


4,460,382

BRAZABLE LAYER FOR INDEXABLE CUTTING INSERT

John M. Ohno, Plymouth, Mich., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 16, 1981, Ser. No. 331,377
Int. Cl.³ B24D 3/06
U.S. Cl. 51—307 6 Claims



1. A process for producing a cutting insert bonded to a carbide substrate comprising:

preparing a dispersion of super-hard crystals selected from at least one member from the group consisting of diamond and cubic boron nitride crystals in carbon black and a temporary binder;

forming a base mixture of carbon fiber, carbon black and filler in a temporary binder;

forming an additional mixture of cobalt and carbon black in a temporary binder;

compacting said dispersion, base mixture and additional mixture together to form an intermediate composite, said additional mixture forming a layer on one surface of said base mixture and said dispersion forming a layer on another surface of said base mixture;

heating said intermediate composite to allow for the removal of said temporary binder and the infiltration of liquefied silicon into said intermediate composite;

sintering said intermediate composite to produce a composite wafer having cobalt, silicon, β-silicon carbide and compounds of $Co_x Si_y$ at said layer on the surface of said base mixture; and

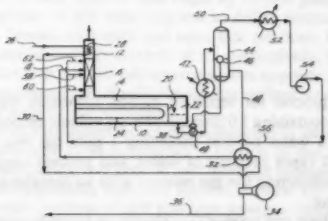
brazing said composite wafer onto said carbide substrate.

4,460,383

METHOD AND APPARATUS FOR RECONCENTRATING LIQUID ABSORBENT

Michael M. Valerius, Houston, Tex., assignor to Black, Sivalls & Bryson, Houston, Tex.

Filed Dec. 20, 1982, Ser. No. 451,340
Int. Cl.³ B01D 53/14
U.S. Cl. 55—32 2 Claims



1. The method of reconcentrating a liquid absorbent including the steps of

heating rich liquid absorbent to vaporize a substantial portion of the absorbed vapors therefrom,

flashing the partially reconcentrated liquid absorbent from said heating step to subatmospheric pressure to vaporize additional absorbed vapors therefrom,

heating the flashed liquids and vapors to replace the heat loss due to the vaporization of some of the liquids being flashed,

separating liquids from the vapor produced in said flashing step,

condensing liquids by cooling the separated vapors, and

reintroducing the condensed liquids and vapors from said condensing step into said heating step.

2. The method of reconcentrating a liquid absorbent, including the steps of

heating rich liquid absorbent to vaporize a substantial portion of the absorbed vapors therefrom,

flashing the partially reconcentrated liquid absorbent from said heating step to subatmospheric pressure to vaporize additional absorbed vapors therefrom,

heating the flashed liquids and vapors to replace the heat loss due to vaporization of some of the liquids being flashed,

separating liquids from the vapor produced in said flashing step,

controlling the flashing of liquid responsive to the liquid level in said separation step to prevent discharge of vapors with separated liquid from the separation step,

condensing liquids by cooling the separated vapors, and

reintroducing the condensed liquids and vapors from said condensing step into said heating step.

4,460,384

PROCESS FOR SEPARATING CARBON MONOXIDE FROM A GAS MIXTURE

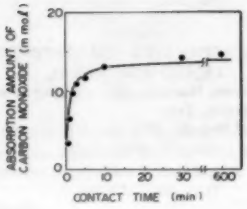
Hidefumi Hirai; Makoto Komiyama, and Susumu Hara, all of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 29, 1982, Ser. No. 373,241

Claims priority, application Japan, Apr. 30, 1981, 56-65444; Aug. 4, 1981, 56-122215; Dec. 4, 1981, 56-195219; Feb. 1, 1982, 57-14588

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—36 10 Claims



1. A process for separting carbon monoxide from a gas mixture containing 1.0 through 99% by volume carbon monoxide and a water content exceeding 1 ppm but less than the saturated vapor pressure of water, said process comprising a step of contacting the gas mixture with an absorbing solution containing:

(a) at least one copper (I) chloride or bromide compound,

(b) at least one aluminum (III) chloride or bromide compound and,

(c) at least one compound having at least two benzene nuclei per molecule and selected from the group consisting of:

(A) a compound selected from the group consisting of diphenyl, 2- ,3-, or 4-methyldiphenyl, 2-, 3- or 4-ethyldiphenyl, 3,4-dimethyldiphenyl, 3,5-diethyldiphenyl, 3,3-dimethyldiphenyl, 3,4'-dimethyldiphenyl, 4,4'-dimethyldiphenyl, 3,3'-diethyldiphenyl, 3,4'-diethyldiphenyl, 4,4'-diethyldiphenyl, diphenylmethane, 3 or 4-methyldiphenylmethane, (3,4-dimethylphenyl) phenylmethane, (3,5-dimethylphenyl)phenylmethane, bis(3,methylphenyl)methane, (3-methylphenyl)(4-methylphenylmethane, 3 or 4-ethyldiphenyl)methane, 3,4-diethyl-diphenylmethane, (3,5-diethylphenyl)-phenylmethane, bis(3-ethylphenyl) methane, (3-ethylphenyl)(4-ethylphenyl)-methane, 1,1-diphenylethane, 1-(3 or 4-methylphenyl)-1-phenylethane, 1-(3,4-dimethylphenyl)-1-phenylethane, 1-(3,5-dimethylphenyl)-1-phenylethane, 1,1-bis(3 or 4-methylphenyl)ethane, 1-(3 or 4-ethylphenyl)-1-phenylethane, 1-(3,4-diethylphenyl)-1-phenylethane, 1-(3,5-diethylphenyl)-1-phenylethane, 1,1-bis(3 or 4-ethylphenyl)ethane, 1,2-diphenylethane, 1,3-diphenylpropane, 1,4-diphenylbutane or mixtures thereof;

(B) the oligomers of styrene or the derivatives thereof; and

(C) the polymers of styrene of the derivatives thereof together with an aromatic solvent; and

(D) the copolymers of (i) styrene or the derivatives thereof and (ii) ethylene or the derivatives thereof together with an aromatic solvent.

4,460,385

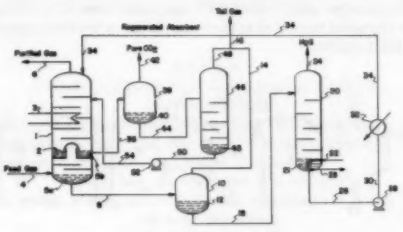
PROCESS FOR THE REMOVAL OF ACID GASES FROM HYDROCARBON GASES CONTAINING THE SAME

Yen-Chi Pan, Westfield, and Eugene L. Stogryn, Edison, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 26, 1982, Ser. No. 444,856

Int. Cl.³ B01D *53/14*

U.S. Cl. 55—73 9 Claims



1. A process for the selective removal of one or more acid gases from a hydrocarbon-containing gas stream, containing the same, wherein at least one of the acid gases present has a partial pressure of at least about one bar, said process comprising, in an absorption step, contacting said gas stream with a solvent for the gases or aqueous mixture containing said solvent, and, in a desorption step, removing at least a portion of said acid gases from said solvent, said solvent comprising at least one hydroxyalkyl pyrrolidone.

4,460,386

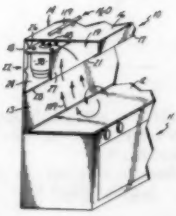
METHOD OF SEPARATING FOREIGN MATTER FROM A GAS

Wolodymyr Diachuk, Golden Valley, Minn., assignor to Century 21 Pollution Control, Inc., Minneapolis, Minn.

Division of Ser. No. 253,311, Apr. 13, 1981, Pat. No. 4,364,754. This application Sep. 30, 1982, Ser. No. 431,107

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—92 9 Claims



1. A method of removing foreign matter from a hot gas and transferring heat from the gas to a first liquid comprising: moving hot gas, gas vapors, and foreign matter carried by hot gas in a spiral flow path in a passage through an elongated cylindrical wall having a gas entrance end and a gas exit end open to said passage to provide an annular sheath of hot gas, gas vapors, and foreign matter adjacent the cylindrical wall, introducing a second liquid into the gas entrance end of said passage during the flow of gas and foreign matter carried by the gas in said passage, said second liquid being collected on said wall and carried from said wall by the annular sheath of gas, dividing the hot gas and second liquid and foreign matter carried by the gas into separate gas streams during the flow thereof in said passage, lowering the temperature of the hot gas in said annular sheath adjacent said cylindrical wall by moving said second liquid in a chamber around said cylindrical wall

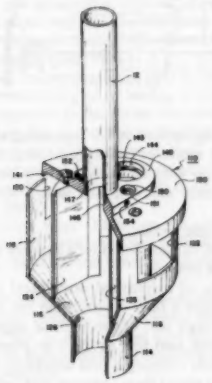
thereby cooling said wall, transferring heat from the hot gas in said annular sheath of gas to said second liquid thereby lowering the temperature of said hot gas, gas vapors, and foreign matter in said annular sheath of gas, condensing gas vapors moving with said annular sheath of gas into liquid droplets, merging the liquid droplets into a liquid film with said first liquid introduced into said passage, collecting foreign matter including the liquid film, carried by the gas on the said wall during the flow of gas through said passage, separating the annular sheath of gas, liquid film, and foreign matter discharged from the exit end of the wall from a stream of gas surrounded by said annular sheath of gas, and moving said second liquid to and from said cooling chamber to cool said wall with said second liquid in the chamber.

4,460,387

DISCHARGE EVACUATION SYSTEM

William R. Barron, McKean, and Peter E. Zell, Erie, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Dec. 16, 1981, Ser. No. 331,069
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—192 **5 Claims**



1. A system for evacuating the fluid discharge of an apparatus, the fluid discharge containing a liquid discharge and a gaseous discharge comprising:

a conduit defining an inlet through which the fluid discharge flows into said conduit, a main outlet through which the liquid discharge flows from said conduit into the discharge side of a plumbing system and a backup outlet which provides fluid communication between the interior of said conduit and both the exterior of said conduit and the exterior of the plumbing system and through which at least a portion of the liquid discharge flows from the conduit when a predetermined volume of liquid discharge backs up in said conduit;

said backup outlet defining an overflow rim over which said discharge flows through said backup outlet when said discharge occupies said predetermined volume;

said overflow rim and said inlet defining an airgap therebetween that prevents said discharge from coming into contact with said inlet before said discharge flows through said backup outlet over said overflow rim; and

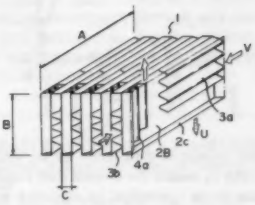
means for removing at least a portion of the gaseous discharge from said conduit and directing the gaseous discharge to an area remote from the area in which said conduit is located to prevent the gaseous discharge from escaping from said conduit through said backup outlet.

4,460,388

TOTAL HEAT EXCHANGER

Akira Fukami, and Kunio Okamoto, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 14, 1982, Ser. No. 398,278
Claims priority, application Japan, Jul. 17, 1981, 56-106679[U]; Aug. 4, 1981, 56-121328
Int. Cl.³ B01D *51/00, 53/04*
U.S. Cl. 55—269 **4 Claims**



1. A total heat exchanger comprising:

a stack of plane parallel spaced heat-exchange plates, of material having heat conductivity and moisture permeability, integrally connected alternately along the entire length of their opposite side edges by narrow plane partition platess of the same material to define alternate passages having inlet ends and open side portions, for first and second counter-currents of air, respectively, flowing into the inlet ends of said passages from opposite sides of said exchanger, all of said plates being defined by a folded single strip of said material;

first sets of corrugated spacer plates disposed in alternate of said passages so as to conduct a portion of the first air current flowing into each of said alternate passages, from the corresponding inlet end thereof, to flow out of said open side portions of said alternate passages opposite the corresponding partition plate thereof; and

second sets of corrugated spacer plates disposed in the remaining of said passages so as to conduct a portion of the second air current flowing into each of said remaining passages, from the corresponding inlet end thereof opposite said inlet ends of said alternate passages, to flow out of said open side portions of said remaining passages opposite the corresponding partition plate thereof;

said first and second sets of spacer plates each comprising at least two separate spacer plates arranged at a position of a point of symmetry with respect to the at least two separate corrugated spacer plates of adjacent passages.

4,460,389

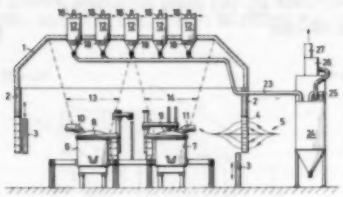
DEVICE FOR FILTERING DUST EXTRACTED FROM FACTORY BUILDINGS

Jörg P. Baum, and Theodor Schäffer, both of Essen, Fed. Rep. of Germany, assignors to Verfahrenstechnik Dr.Ing.Kurt Baum

Continuation of Ser. No. 917,657, Jun. 21, 1978, abandoned. This application Feb. 21, 1980, Ser. No. 123,398
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1977, 2731066
Int. Cl.³ B01D *46/04; C21B 7/22*
U.S. Cl. 55—273 **6 Claims**

1. Apparatus for the extraction of dust from dust-laden air in an industrial building containing a plurality of dust emitters, said building defining a finite space in which the dust-laden air to be drawn by said apparatus is contained with the total capacity of said apparatus being determined in accordance with the maximum quantity of dust-laden air to be drawn from said finite space, said apparatus comprising a plurality of separate individual dust extractors, with each of said individual extractors having its own individual filter means, its own individual blower means and individual drive means for independently

individually actuating each of said blower means, said dust extractors each including means for enabling each of said dust extractors individually to receive dust-laden air from any part of said finite space, said individual blower means and said individual drive means being operable to selectively individu-



ally terminate receipt of dust-laden air by said individual extractors thereby to enable the overall dust removal capacity of said apparatus to be controlled by selective actuation of said blower means and said drive means to adapt said apparatus to changes in the dust removal capacity necessary for said finite space.

4,460,390

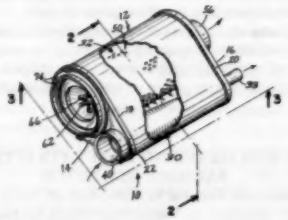
TWO STAGE AIR CLEANER WITH SIDE-BY-SIDE ELEMENTS

Steven M. Alseth, Bloomington; Daniel S. Gauer, Apple Valley, and Bruce M. Sullivan, Burnsville, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Sep. 30, 1982, Ser. No. 431,050

Int. Cl.³ B01D *50/00*

U.S. Cl. 55—323 **14 Claims**



1. An air cleaner assembly comprising:

(a) a housing in the shape of a pair of arcuate portions with concave surfaces opposing, said housing having first and second ends, said first end having an air inlet opening and said second end having an air scavenge opening smaller than said inlet opening, one of said ends having an air outlet opening;

(b) a first air cleaning means located between said inlet and scavenge openings, and in airtight abutment therewith; and

(c) a second air cleaning means located within said housing adjacent and in fluid communication with said first cleaning means and having a central opening disposed in airtight abutment with said outlet opening.

4,460,391

CENTRIFUGAL-CHAMBER SEPARATING APPARATUS

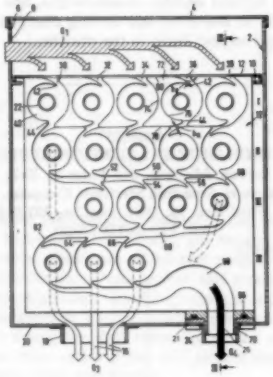
Friedrich E. Müller, Eisdorf; G. Wolfgang Oesterwind, Osterode, and Jürgen Nothdurft, Clausthal-Zellerfeld, all of Fed. Rep. of Germany, assignors to Anton Piller GmbH & Co. KG, Fed. Rep. of Germany

Filed Feb. 2, 1982, Ser. No. 345,015

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1981, 3103842

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—343 **5 Claims**



1. A separating apparatus for separating solids suspended in a gas stream by means of centrifugal force, the apparatus comprising a housing with an inlet aperture for the crude gas, at least one separator unit disposed within said housing and including

(a) a pair of end panels,

(b) a first set of parallel flow channels open to said inlet aperture at one end,

(c) a plurality of cylindrical centrifugal chambers, each of which adjoins a flow channel and has a trailing edge and a leading edge and between these edges is open to said flow channel, said first set of flow channels and centrifugal chambers defining a first separator stage,

(d) additional sets of flow channels and centrifugal chambers arranged downstream of said first separator stage so as to define a plurality of sequential separator stages from said first separator stage to a last separator stage, such that in successive separator stages in the direction of flow of the gas stream the total number of said flow channels and the total number of said centrifugal chambers in some of said stages decreases, all of said flow channels and centrifugal chambers being bounded by said end panels,

(e) a transverse duct located between each pair of adjacent separator stages having different numbers of said parallel flow channels and centrifugal chambers, each such transverse duct joining together said sets of parallel flow channels such that the centrifugal chambers in the separator stage located downstream of such transverse duct are acted on uniformly by the gas stream, the transverse duct downstream of the last stage being connected to a residual gas outlet channel adapted to receive the residual gas from the set of parallel flow channels in said last stage,

(f) two outlet pipes disposed coaxially in each of said centrifugal chambers, said outlet pipes extending towards each other from said end panels, and

(g) flange means joined to said end panels and disposed about the open ends of said first set of parallel flow channels,

said housing further comprising (1) a disposed partition within said housing and located downstream of said inlet aperture and having at least one opening for receiving said at least one separator unit, the flange means of said at least one separator

unit sealingly coacting with said partition about said opening, (2) two opposite walls spaced from the end panels of said at least one separator unit, (3) a purified gas outlet communicating with said outlet pipes, and (4) a residual gas outlet to which said residual gas outlet channel of said at least one separator unit is sealingly connected.

4,460,392

FILTER FOR OSTOMY BAGS

Finn Poulsen, Vaerlose; Peter Samuelsen, Rungsted Kyst, and Niels O. Johannesson, Espergaerde; all of Denmark, assignors to Coloplast A/S, Espergaerde, Denmark

Filed Feb. 24, 1983, Ser. No. 469,479
Claims priority, application Denmark, Feb. 23, 1982, 776/82
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—385 C **7 Claims**

1. A deodorizing gas filter applied to or for being applied to an ostomy bag or similar aid, consisting of

(a) a sheet (**10**) of gas penetrable, porous, deodorizing filter material with a central inlet (**12**) for the gases to be deodorized, which after passage through the filter in a centrifugal direction leave it at its outer rim,

(b) a gas-impervious connecting layer (**14**) on one side of the sheet (**10**), either consisting of or having a self-gluing adhesive on the side opposite to the sheet, or consisting of a film which is welded or can be welded to the bag, the said connecting layer being in total surface contact with the sheet (**10**), and having a central opening of substantially the same size and form as, and being aligned with the central opening (**12**) of the filter sheet,

(c) a gas-tight covering layer (**16,24**) on the other side of the sheet (**10**) being in full surface contact with the sheet (**19**) by means of gluing, welding and covering its central opening (**12**), and

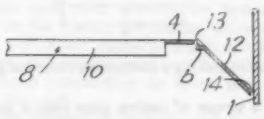
(d) a removable protecting cover, characterized in that the covering layer (**16**) consists of an elastic film material or when non elastic has, at least in that part covering the central opening and an immediately surrounding zone thereof, a layer of elastic material.

4,460,393

APPARATUS FOR CENTRIFUGAL SEPARATION OF A MIXTURE CONTAINING AT LEAST ONE GASEOUS PHASE

Pierre Saget, 36 Avenue de la Grande Armée, Paris, France (75017)

Filed Mar. 3, 1983, Ser. No. 471,815
Claims priority, application France, Mar. 3, 1982, 82 03532
Int. Cl.³ B01D *21/26*
U.S. Cl. 55—406 **6 Claims**



1. Improved apparatus for the centrifugal separation of a mixture containing at least one gaseous phase, of the type comprising inside a fixed enclosure, a rotary assembly constituted by a treatment rotor with apertured discs angularly offset one with respect to the other, upstream by a rotary distributor and downstream by a fan with optional interposition of a rotary rectifier, the mixture to be treated flowing in laminar style through the apertures of the discs in helical running streams separated by helical still layers, in which the non-gaseous phase to be separated moves on between the discs as far as the fixed part of the enclosure where it is picked up and moved upstream, wherein the means to annihilate at least partly the downstream leaks through the annular opening necessarily provided between the discs and the fixed part to allow the rotation of the rotary assembly are constituted by small axial blades formed on the periphery of any one at least of the elements constituted by the discs and by the fixed part of the enclosure to generate an axial screen of fluid flowing backwards towards the upstream part through said annular opening, the screen then making it so that the mixture is entirely treated and that the separated heavy phase moves upstream along the wall of the enclosure.

4,460,394

EVAPORATIVE COOLER PAD ASSEMBLY

Robert W. Wrightson, 3 Rothesay Ave., St. Marys, South Australia, Australia

Filed Jun. 14, 1982, Ser. No. 388,111
Claims priority, application Australia, Jun. 19, 1981, PE9364
Int. Cl.³ B01D *46/10*
U.S. Cl. 55—491 **3 Claims**

1. An evaporative cooler pad assembly comprising a pad of absorbent material and a pair of side grids, each said grid being a moulding of polymeric material and having a plurality of projections interengaging the other said grid, at least some of said projections extending through said pad and thereby supporting said pad, each said grid being of identical size and shape, one being inverted and reversed in direction with respect to the other, each said projection of each said grid being a spike, and each of at least some of said projections has a barbed end which engages a membrane in the other of said grids and resists release and wherein one edge of each of said grids has a row of tabs extending therefrom, and a row of stub posts also extending therefrom and supporting a guide bar spaced from the tabs to define a slot in end elevation, the other end also having a plurality of stub posts extending therefrom and supporting a retaining bar which is spaced from the guide bar of the other said grid and defines therewith a retaining space which retains and compresses the pad of absorbent material.

4,460,395

METHOD AND APPARATUS FOR PRODUCING FOOD GRADE CARBON DIOXIDE

John E. Nobles, Prairie Village, Kans., and Leonard K. Swenson, Kansas City, Mo., assignors to The Pritchard Corporation, Kansas City, Mo.

Filed Jan. 18, 1983, Ser. No. 458,845
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—18 **5 Claims**

1. A method of producing liquid food grade carbon dioxide from an impure carbon dioxide gas stream containing contaminants such as a combination of heavy and light sulfur com-

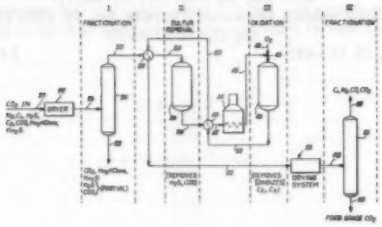
pounds and C_1+ hydrocarbons, said method comprising the steps of:

passing the impure gas stream through a fractionation zone operated under conditions to condense a part of the feed gas with the resulting liquid being brought into contacting relationship with incoming feed gas thereby causing heavy sulfur compounds and C_3+ hydrocarbons to be dissolved in the liquid;

separating the liquid containing said heavy sulfur compounds and the C_3+ hydrocarbons from the remaining treated gaseous feed stream;

then subjecting the treated gas stream to an absorption medium capable of removing light sulfur compounds from the gas stream;

next introducing the gas stream inot an oxidizing atmosphere in the presence of a catalyst such that the temperature is maintained in the range of from about 800° F. to about 1600° F. and the residence time is such that in the case of a gas stream fed thereto containing less than about 1% C_1 hydrocarbon, essentially all of the C_2 hydrocarbon and a major proportion of such C_1 hydrocarbon is oxidized and



converted to carbon oxide and water whereas in the case of a gas stream containing about 1% or more C_1 hydrocarbon, essentially all of the C_2 hydrocarbon and a minor proportion of the C_1 hydrocarbon is oxidized and converted to carbon oxide and water;

treating the gas stream to remove water and other condensible materials therefrom without forming appreciable amounts of carbon oxide-water hydrates;

refregerating the dried gas stream to an extent to liquefy carbon dioxide therein while residual non-condensible constituents at such liquefaction temperature remain in a gaseous state; and

separating the non-condensed constituents from the liquified carbon dioxide by subjecting the latter to indirect heat exchange with a medium at a temperature above that of the liquefied carbon dioxide to strip therefrom sufficient volatile non-condensed constituents contained in the liquid carbon dioxide to produce a liquid product which is essentially devoid of C_2+ hydrocarbons and contains less than about 35 parts per million of C_1 hydrocarbon and a total sulfur content of less than about 5 parts per million.

4,460,396

METHOD FOR PRODUCING PURIFIED ETHYLENE THROUGH THERMO-COUPLED DISTILLATION AND ETHYLENE-PRODUCING APPARATUS USING THE SAID METHOD

Victor Kaiser, Maisons Laffitte; Gérard Heck, Louveciennes, and Philippe Lepetit, Marly-le-Roi, all of France, assignors to Compagnie Francaise d'Etudes et de Construction "Technip", Paris, France

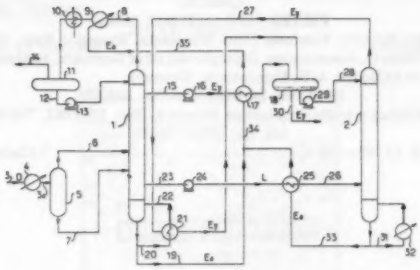
Filed Jul. 15, 1982, Ser. No. 398,310

Claims priority, application France, Sep. 2, 1981, 81 16707; Jan. 22, 1982, 82 01018

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—28 **24 Claims**

1. A method for producing purified ethylene, of the type consisting in cooling a condensate of hydrocarbons enriched with hydrocarbons having two carbon atoms (C_2) to condense at least a portion thereof, in sending the said hydrocarbons to a phase separator, and in sending the said separated phases to an ethylene-recovery unit, characterized in that it consists in sending the said separated phases to a first or lower-pressure fractionating column, in feeding a second or higher-pressure fractionating column with at least a portion L of a liquid frac-



tion intermediate between the head fraction and the bottom fraction of the said first fractionating column, and in condensating at least partially the head fraction of the second fractionating column through heat exchange with at least a portion of the reflux fluid of the said first column flowing in the reboiling system associated with the said first column.

4,460,397

FLOAT GLASS METHOD AND APPARATUS WITH ENHANCED LATERAL TRACTION FOR ATTENUATION

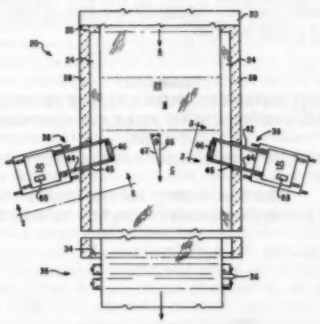
Edward M. Kapura, Carlisle, Pa., and Henry C. Goode, Owen Sound, Canada, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 27, 1982, Ser. No. 423,968

The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.

Int. Cl.³ C03B *18/04*

U.S. Cl. 65—99.5 **25 Claims**



1. A method of making a continuous ribbon of glass comprising:

delivering a stream of molten glass onto a pool of molten metal so as to form a ribbon of glass;

applying lateral forces to the ribbon as it is drawn longitudinally on the molten metal, at least a portion of the forces being applied by means of a rotating cylinder having glass-contacting projections on its outer surface engaging marginal edge portions of the ribbon, the cylinder being rotated about its axis and the axis being supported substantially horizontally, the projections engaging the ribbon at

an orientation so as to exert a force on the ribbon substantially free of a longitudinal component.

20. Apparatus for attenuating a ribbon of glass which moves horizontally through an elongated chamber upon a pool of molten metal, comprising:

a generally cylindrical member;

means for supporting the cylindrical member within the chamber with its axis substantially parallel to the longitudinal direction of glass travel;

means for rotating the cylindrical member about its axis;

a plurality of glass-engaging elements projecting from the surface of the cylindrical member, each glass-engaging element having its major glass-impelling surface oriented substantially radially with respect to the cylinder and substantially parallel to the axis of the cylinder.

4,460,398

FREEZE VALVE HAVING MULTIPLE HEATING-COOLING MEANS

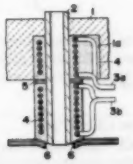
Noriaki Sasaki, Naka, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Continuation of Ser. No. 266,062, May 19, 1981, abandoned. This application May 17, 1983, Ser. No. 494,494

Claims priority, application Japan, Aug. 5, 1980, 55-107325

Int. Cl.³ C03B 5/26

U.S. Cl. 65—327 4 Claims



1. A molten glass material discharge nozzle structure for the bottom of a glass material melting furnace, said structure having a freeze valve incorporated therein, said structure comprising:

a glass material discharge nozzle made of a heat and glass resistant material;

at least two heating and cooling means for (1) selectively heating molten glass material discharging through said discharge nozzle or (2) selectively conveying a cooling medium in heat exchange relationship with the discharge nozzle, said conveying being for positively cooling the glass material discharging through said discharge nozzle, said heating and cooling means being provided around respective upper and lower parts of the length of said discharge nozzle and in series in the longitudinal direction of said discharge nozzle to form the freeze valve;

a heat insulating element located between the respective heating and cooling means and extending radially outwardly from said discharge nozzle to a point radially outwardly beyond said heating and cooling means and thermally insulating the individual heating and cooling means from each other whereby the heat and cooling produced by the heating and cooling means surrounding the upper part of said discharge nozzle is independent of the heating and cooling produced by the heating and cooling means surrounding the lower part of said discharge nozzle; and

ejection means disposed at the lower end of said discharge nozzle, the ejection means being for ejecting a high pressure gas toward the axis of said discharge nozzle with sufficient force to cut a molten glass material stream issuing from the lower end of said discharge nozzle to cool the lower end of said discharge nozzle;

the structure being designed such that the upper and lower parts of the length of said discharge nozzle surrounded by said heating and cooling means can be heated and cooled independently of each other, and molten glass material can be discharged through said nozzle structure by operating the heating and cooling means around both the upper and lower parts of said nozzle to heat both the upper and lower parts of the length of the discharge nozzle sufficiently to melt the glass material therein, and the flow of molten glass material through said discharge nozzle can be stopped by operating the heating and cooling means around the upper part of said discharge nozzle to cool the upper part of the discharge nozzle to thereby solidify the molten glass material in said upper part while operating the heating and cooling means around the lower part of said discharge nozzle to heat the lower part of the discharge nozzle to thereby cause molten glass material in said lower part to continue to flow.

4,460,399

DIPHENOXY ETHER FORMAMIDE PLANT-GROWTH REGULATOR

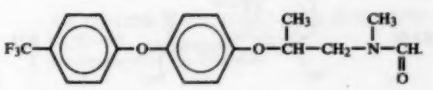
David C. K. Chan, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 26, 1982, Ser. No. 342,866

Int. Cl.³ A01N 37/18; C07C 103/34

U.S. Cl. 71—070 3 Claims

1. A compound having the formula:



(I)

3. A method for defoliating and desiccating cotton plants which comprises applying to the foliage of said plants an amount of the compound of claim 1 effective to defoliate and desiccate said cotton plants.

4,460,400

DIHYDROPYRONES, NOVEL STARTING PRODUCTS USED THEREIN, COMPOSITIONS CONTAINING THE NOVEL DIHYDROPYRONES AS ACTIVE INGREDIENTS, AND THE USE THEREOF FOR COMBATING WEEDS

Hans Tobler, Allschwil, and Werner Föry, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

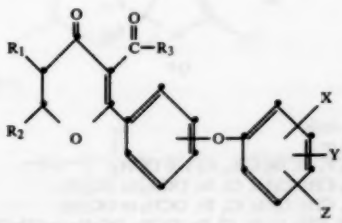
Filed May 24, 1982, Ser. No. 381,599

Claims priority, application Switzerland, Jun. 3, 1981, 3630/81

Int. Cl.³ A01N 43/16; C07D 309/32

U.S. Cl. 71—88 16 Claims

1. A compound of the formula I



(I)

wherein R_1 and R_2 independently of one another are each a C_1-C_4-alkyl group, or one of the two substituents is also hydrogen, or R_1 and R_2 jointly form a C_2-C_6-alkylene bridge, R_3 is C_1-C_4-alkoxy, C_2-C_6-alkenyloxy, C_2-C_4-alkynyloxy, C_1-C_4-haloalkoxy, C_3-C_5-alkoxyalkoxy or hydroxyl, and X, Y and Z independently of one another are each hydrogen, halogen, C_1-C_4-alkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkyl, C_1-C_4-haloalk-

oxy, -S(O)$_n$-C$_1$-C$_4$-alkyl, -S(O)$_n$-C$_1$-C$_4$-haloalkyl, where n is 0, 1 or 2, or they are each C(O)OR$_4$, where R$_4$ is hydrogen or C$_1$-C$_4$-alkyl, or they are each NO$_2$, CN or NR$_5$R$_6$, where R$_5$ and R$_6$ independently of one another are each hydrogen, C$_1$-C$_4$-alkyl, C$_1$-C$_4$-alkylcarbonyl, C$_1$-C$_4$-haloalkylcarbonyl or C$_1$-C$_4$-haloalkylsulfonyl, including the acid addition salts thereof.

15. A method for combating weeds, which method comprises applying thereto a herbicidally effective amount of a compound of the formula I according to claim 1.

4,460,401

BENZENESULFONAMIDES AS HERBICIDES

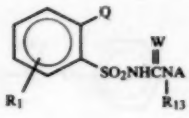
Richard F. Sauers, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 337,933, Jan. 7, 1982, abandoned. This application Nov. 1, 1982, Ser. No. 437,367

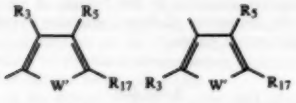
Int. Cl.[3] **C07D** *405/12, 409/12;* **A01N** *43/54, 43/66*

U.S. Cl. 71—92 **28 Claims**

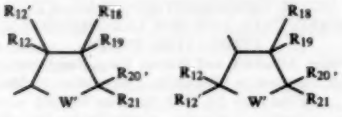
1. A compound of the formula:



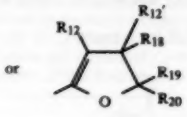
where Q is



Q-1 Q-2



Q-6 Q-7



Q-8

where

W is O or S;

W' is O or S;

R$_1$ is H, F, Cl, Br, CH$_3$, CF$_3$ or OCH$_3$;

R$_3$ is H, CH$_3$, C$_2$H$_5$, Cl, Br, OCH$_3$ or OC$_2$H$_5$;

R$_5$ is H, CH$_3$, C$_2$H$_5$, Cl, Br, OCH$_3$ or OC$_2$H$_5$;

R$_{17}$ is H, CH$_3$, C$_2$H$_5$, Cl, Br, OCH$_3$, OC$_2$H$_5$ or CO$_2$CH$_3$;

R$_{12}$ is H or CH$_3$;

R$_{12}$' is H or CH$_3$;

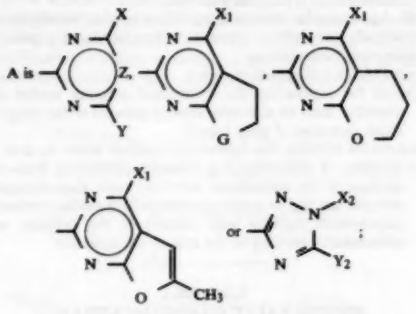
R$_{13}$ is H or CH$_3$;

R$_{18}$ is H or CH$_3$;

R$_{19}$ is H or CH$_3$;

R$_{20}$ is H or CH$_3$;

R$_{21}$ is H or CH$_3$;



X is CH$_3$, OCH$_3$ or Cl;

Y is CH$_3$, C$_2$H$_5$, CH$_2$OCH$_3$, OCH$_3$, OC$_2$H$_5$, CH(OCH$_3$)$_2$, SCH$_3$, CF$_3$, NH$_2$, NHCH$_3$, N(CH$_3$)$_2$, OCH$_2$CH$_2$OCH$_3$, OCH$_2$CF$_3$ or

Z is CH;

X$_1$ is CH$_3$, OCH$_3$ or Cl;

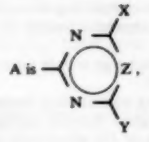
G is O or CH$_2$;

X$_2$ is C$_1$-C$_3$ alkyl or CH$_2$CF$_3$;

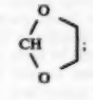
Y$_2$ is CH$_3$O, C$_2$H$_5$O, CH$_3$S or C$_2$H$_5$S;

and their agriculturally suitable salts; provided that

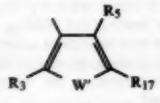
(1) when W is S, then R$_{13}$ is H,



Y is CH$_3$, OCH$_3$, C$_2$H$_5$, CH$_2$OCH$_3$, CH(OCH$_3$)$_2$ or



(2) when Q is



then R$_3$ is H, CH$_3$ or C$_2$H$_5$; R$_5$ is H, CH$_3$ or C$_2$H$_5$; and R$_{17}$ is H, CH$_3$, C$_2$H$_5$ or —CO$_2$CH$_3$;

(3) when one of R$_3$, R$_5$, R$_{17}$ is other than H, then the other two substituents are H or CH$_3$;

(4) the total number of carbon atoms in R$_{12}$, R$_{12}$', R$_{18}$, R$_{19}$, R$_{20}$, and R$_{21}$ is less than or equal to 4;

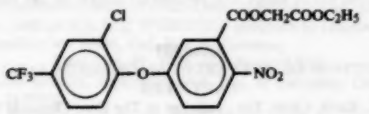
(5) when X is Cl, then Y is OCH$_3$, NH$_2$, OC$_2$H$_5$, NHCH$_3$ or N(CH$_3$)$_2$.

4,460,402
SYNERGISTIC HERBICIDE COMPOSITIONS OF PHENOXYBENZOIC ACIDS AND CYCLOHEXANEDIONES

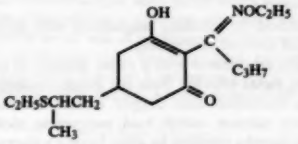
Robert E. Holm, Belle Mead, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jul. 10, 1981, Ser. No. 282,201
Int. Cl.³ A01N 31/04
U.S. Cl. 71—98 3 Claims

1. A herbicidal composition comprising a first compound having the formula:



and a second compound having the formula:



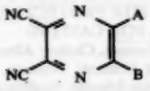
wherein the second compound also may be in the form of agronomically acceptable metal salts, and wherein the ratio by weight of said first compound to said second compound is about 1 to 2.

4,460,403
2,3-DICYANO 6 PHENYL PYRAZINE HERBICIDES

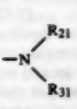
Tetsuo Takenatsu, Utsunomiya; Hirozo Segawa, Nakajyo; Takamaro Miura, Nakajyo; Toshiei Ataka, Nakajyo; Michio Chatani, Nakajyo, and Akira Nakamura, Nakajyo, all of Japan, assignors to Kyowa Gas Chemical Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 969,938, Dec. 15, 1978, abandoned. This application Nov. 4, 1980, Ser. No. 204,038
Claims priority, application Japan, Dec. 22, 1977, 52-154908; Jan. 20, 1978, 53-4245; Jan. 20, 1978, 53-4246; Jul. 26, 1978, 53-90343
Int. Cl.³ C07D 241/26, 241/24; A01N 43/60
U.S. Cl. 71—93 14 Claims

1. A herbicidal composition comprising a herbicidally effective amount of a 2,3-dicyanopyrazine compound of the general formula



wherein A represents a phenyl group which may contain 1 to 3 substituents selected from the group consisting of halogen atoms, lower alkyl groups, lower alkoxy groups and nitro groups; and B represents a group of the formula



in which R_{21} and R_{31}, independently from each other, represent a hydrogen atom, a lower alkyl group which may have 1 or 2 substituents selected from the group consisting of halogen atoms, phenyl groups, hydroxyl groups, carboxyl groups, cyano groups, lower alkoxy groups, lower dialkylamino groups and lower alkoxycarbonyl groups, an allyl group, a phenyl group which may have 1 or 2 substituents selected from the group consisting of halogen atoms and lower alkyl, lower alkoxy and trifluoromethyl group, or a benzyl group, with the proviso that R_{21} and R_{31} do not both represent a hydrogen atom at the same time, or the group of the formula

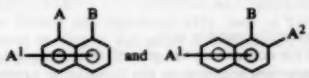
is an ethyleneimino, pyrrolidino, piperidino, hexamethylenimino or morpholino group, and an agronomically acceptable carrier.

4,460,404
TRIAZINYL UREAS AND ISOUREAS

George Levitt, Wilmington, Del., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 184,371, Sep. 15, 1980, Pat. No. 4,370,479, which is a continuation-in-part of Ser. No. 098,724, Nov. 30, 1979, abandoned. This application Sep. 22, 1982, Ser. No. 421,416
Int. Cl.³ C07D 251/52, 251/18; A01N 43/66, 43/70
U.S. Cl. 71—93 33 Claims

1. A compound of the formulas:

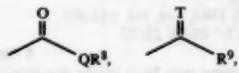


I II

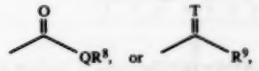
wherein

A^1 is H, F, Cl, Br, CH_3O or NO_2;

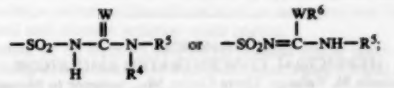
A and A^2 are independently



Cl, F, Br, NO_2, $-CH_3$, $-SO_2NR^1R^2$, $-SO_2N(CH_3)(OCH_3)$, $-S(O)_nR^3$, $-OR^3$, $-OSO_2R^3$ or $-OSO_2CF_3$; with the proviso that A cannot be



B is



n is 0, 1 or 2;

Q is O, S or NR^7;

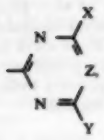
R^1 is C_1–C_4 alkyl;

R^2 is C_1–C_4 alkyl;

R^3 is C_1–C_4 alkyl;

R^4 is H or CH_3;

R^5 is



R^6 is C_1–C_6 alkyl;

R^7 is H, —OCH_3 or C_1–C_4 alkyl;

when Q is O or S then R^8 is C_1–C_6 alkyl, C_3–C_6 alkenyl, $CH_2CH_2OCH_3$, $CH_2CH_2OCH_2CH_3$, C_5–C_6 cycloalkyl, C_4–C_7 cycloalkylalkyl, phenyl, benzyl, or phenyl or benzyl substituted with one or two groups selected from CH_3, Cl or OCH_3; and when Q is O, R^8 may also be CH_2CH_2Cl; when Q is NR^7 then R^8 is H, C_1–C_4 alkyl, C_3–C_4 alkenyl and R^8 and R^7 taken together can be —$(CH_2)_4$—, —$(CH_2)_5$— or —$CH_2CH_2OCH_2CH_2$— with the proviso that when R^7 is CH_3O, R^8 is CH_3;

R^9 is C_1–C_6 alkyl, C_3–C_6 alkenyl, C_5–C_6 cycloalkyl, C_4–C_7 cycloalkylalkyl; benzyl, or benzyl substituted with one or two groups selected from CH_3, Cl or OCH_3;

R^{10} is H or CH_3;

R^{11} is C_1–C_3 alkyl;

R^{12} is C_1–C_3 alkyl or C_3–C_6 alkenyl;

T is O or N—OR^{12};

W is O or S;

X is CH_3, CH_3O or CH_3CH_2O;

Y is H, C_1–C_3 alkyl, CH_3OCH_2, $CH_3CH_2OCH_2$, OCH_2CO_2—(H or C_1–C_2 alkyl), $OCH(CH_3)CO_2$ (H or C_1–C_2 alkyl), O—(C_1–C_3 alkyl), O—(C_3–C_4 alkenyl) or $NR^{10}R^{11}$;

Z is N,

and their agriculturally suitable salts.

26. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

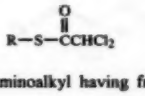
4,460,405

DICHLOROACETYL THIOESTERS AS HERBICIDAL ANTIDOTES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

Filed Jan. 25, 1982, Ser. No. 342,265
Int. Cl.³ A01N *25/32*
U.S. Cl. 71—100 **8 Claims**

1. The method of protecting corn from injury due to at least one thiolcarbamate herbicide selected from S-ethyl dipropyl thiolcarbamate and S-propyl N,N-dipropyl thiolcarbamate, comprising preplant incorporation in the soil in which said corn is to be planted and a non-phytotoxic, antidotally effective amount of a compound corresponding to the formula



wherein R is dialkylaminoalkyl having from 3 to 9 carbon atoms, inclusive.

4,460,406

HERBICIDAL CONCENTRATED EMULSIONS

Baudouin M. Valange, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 19, 1982, Ser. No. 369,697
Int. Cl.³ A01N *25/02*
U.S. Cl. 71—100 **9 Claims**

1. A herbicidal concentrated emulsion composition consisting essentially of the following components:

A. from about 40.0 to about 65.0 percent by weight of a 2-haloacetanilide or thiocarbamate herbicide which is a solid at room temperature and which has a solution point in water of about 25° C. or less;

B. from about 15.0 to about 30.0 percent by weight of a hydrocarbon solvent;

C. from about 2.5 to about 10.0 percent by weight of an emulsifier which is a nonionic emulsifying agent having an HLB of 18.0 or greater;

D. from about 0.5 to about 5.0 percent by weight of a C_{14-20} straight chain alcohol; and

E. balance being made up of water containing an agriculturally acceptable salt or urea at a concentration of from about 4.0 to about 20.0 percent by weight of the water.

4,460,407

METHOD OF PREPARING MAGNESIUM ALLOY PARTICLES

Earl K. Keith, Clute, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 20, 1982, Ser. No. 450,947
Int. Cl.³ B22F *9/00*
U.S. Cl. 75—0.5 C **20 Claims**

12. A method for graining magnesium into solid discrete particles, said method comprising

alloying the magnesium with a minor amount of at least one alloying metal selected from the group consisting of aluminum, zirconium, zinc, copper, cerium, arsenic, barium, cadmium, calcium, cobalt, lead, manganese, nickel, silver, and tin, thereby creating an alloy having a slurry temperature range of at least about 10° C.,

stirring the alloy at molten temperature under an inert atmosphere to prevent formation of oxides or other insoluble ingredients, and

cooling the alloy, while stirring, until the alloy has cooled to freezing at a temperature below the slurry temperature range, thereby forming solid discrete alloy particles.

4,460,408

PROCESS FOR PREPARATION OF CHALCOGENIDE ALLOYS BY COREDUCTION OF ESTERS

Santokh S. Badesha, Ontario, and Thomas W. Smith, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 5, 1982, Ser. No. 405,651
Int. Cl.³ C01B *19/02*
U.S. Cl. 75—0.5 R **24 Claims**

1. A process for the preparation of chalcogenide alloys in high purity which comprises providing pure esters of the desired chalcogenide, and subsequently subjecting the mixture of esters to a coreduction reaction.

4,460,409

PROCESS AND INSTALLATION FOR PROTECTING A JET OF MOLTEN METAL FOR CASTING

Serge Devalois, Fourqueux; Thierry Hersant, Chatou; Albert G. Goursat, Elancourt Maurepas, and Francois Weisang, Antony, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Mar. 11, 1983, Ser. No. 474,543
Claims priority, application France, Mar. 15, 1982, 82 04297
Int. Cl.³ C22B *9/00*; C21C *7/10*
U.S. Cl. 75—96 **17 Claims**

1. In a process for protecting a jet of molten liquid metal running between an upper storage tank and an impact zone in a lower receiving vessel such that, around said jet and extending the whole height thereof, a protective rising gas sheath is created, formed from at least one gas that is virtually inert with respect to said metal, including injecting said inert gas around the impact zone of said jet, and confining said inert gas above the surface of the molten metal and around the base of said jet by means of a sleeve, open at both ends, to enclose the base of

said jet and with the sleeve being partially immersed in said molten metal; the improvement comprising injecting at least one inert gas above and near the surface of the molten metal contained in the lower vessel and, at the same time, injecting at least one inert gas into the molten liquid metal through one or both of the base and the walls of said vessel.

4,460,410

PROCESS FOR THE MANUFACTURE OF A PERYLENE TETRACARBOXYLIC ACID DIANHYDRIDE PIGMENT

Ernst Spietschka, Idstein/Taunus, and Manfred Urban, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 21, 1982, Ser. No. 451,822

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3150956

Int. Cl.³ C04B *31/00;* **C09D** *11/00;* **C07D** *311/02*

U.S. Cl. 106—19 **13 Claims**

1. A method for making an aqueous suspension of a perylene-3,4,9,10-tetracarboxylic acid dianhydride pigment, which method comprises adding a solution consisting essentially of water, an alkali metal salt of perylene-3,4,9,10-tetracarboxylic acid, and a surfactant to an excess of acid, referred to total alkali, at a pH below 3 and at a temperature of 0° C. to 90° C. and then heating the mixture to a temperature of 50° C. to 150° C.

4,460,411

NITROCELLULOSE COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Etsuo Ohtake, Kanagawa, and Akihiko Higuchi, Himeji, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP82/00091, 371 Date Dec. 1, 1982, 102(e) Date Dec. 1, 1982, PCT Pub. No. WO82/03399, PCT Pub. Date Oct. 14, 1982

PCT Filed Apr. 1, 1982, Ser. No. 451,204

Claims priority, application Japan, Apr. 2, 1981, 56/50200

Int. Cl.³ C08L *1/18, 75/04;* **G11B** *5/70*

U.S. Cl. 106—183 **18 Claims**

1. A nitrocellulose composition in the form of chips, which composition consists essentially of from 50 to 80 wt.% of nitrocellulose, less than 1 wt%. of water, and the balance is essentially a member selected from the group consisting of (1) a first organic solvent capable of dissolving nitrocellulose and polyurethane resin but which is nonreactive with isocyanate compounds, (2) a mixture of said first organic solvent with a second organic solvent which is miscible with said first organic solvent but which is immiscible with water, (3) a mixture of (1) and a binder resin for binding magnetic powder to a plastic film to make a magnetic tape, and (4) a mixture of (2) with a binder resin for binding magnetic powder to a plastic film to make a magnetic tape.

4,460,412

METHOD OF MAKING MAGNETIC BUBBLE MEMORY DEVICE BY IMPLANTING HYDROGEN IONS AND ANNEALING

Ryo Imura, Sayama; Tadashi Ikeda; Ryo Suzuki, both of Kodaira; Nagatugu Koiso, Tama; Teruaki Takeuchi, Kokubunji; Hiroshi Umezaki, Mitaka, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1982, Ser. No. 367,675

Claims priority, application Japan, Apr. 15, 1981, 56-55551

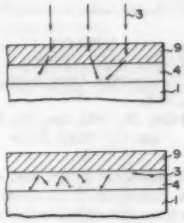
Int. Cl.³ H01L *21/265;* **G11C** *19/08;* **C04B** *35/00*

U.S. Cl. 148—1.5 **18 Claims**

1. A method of implanting a magnetic garnet film with ions to provide an ion-implanted layer in a magnetic bubble memory device comprising the steps of:

providing a covering film on a magnetic garnet film for magnetic bubbles, said film comprising a material that scatters hydrogen ions and that prevents hydrogen ion evaporation;

implanting hydrogen ions in a desired portion of a surface region in said magnetic garnet film through said covering film to form said ion-implanted layer at said desired portion of said surface region, the direction of travel of said



ions being irregularly changed as the ions pass through said covering layer, and

heating the ion-implanted layer to an annealing temperature to cause uniform distribution of the implanted ions in said ion-implanted layer of said garnet film under said covering layer.

4,460,413

METHOD OF PATTERNING DEVICE REGIONS BY OXIDIZING PATTERNED ALUMINUM LAYER

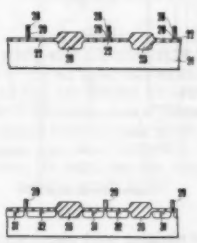
Kazuo Hirata, and Masatoshi Oda, both of Tokyo, Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,612

Claims priority, application Japan, Dec. 26, 1980, 55-189024; Apr. 30, 1981, 56-65491

Int. Cl.³ H01L *21/76, 21/225, 29/78, 21/308*

U.S. Cl. 148—1.5 **10 Claims**



1. A method of manufacturing a MOS FET comprising the steps of:

forming a gate oxide film and an isolation oxide region on a silicon substrate of one conductivity type;

forming a polycrystalline silicon layer on said gate oxide film and said element isolation oxide region;

forming an Al layer on said polycrystalline silicon layer;

forming a resist pattern of a predetermined shape on said Al layer;

selectively etching off said Al layer by using said resist pattern as a mask;

oxidizing the remaining Al layer in warm water;

removing said resist pattern and remaining Al layer by a dry etching technique utilizing CCl_4 thus forming a narrow pattern;

etching off exposed polycrystalline silicon layer by using said narrow Al_2O_3 pattern as a mask thus forming a structure comprising said gate oxide film, said isolation oxide

region, a narrow polycrystalline silicon region thereon, and a narrow Al_2O_3 pattern;

dipping said structure in an acid solution to remove said narrow Al_2O_3 pattern; and

implanting an impurity of the other conductivity type into said substrate to form closely adjacent source region and drain region by using said narrow polycrystalline silicon region as a mask.

4,460,414

SOLDER PASTE AND VEHICLE THEREFOR

Jennie S. Hwang, Pepper Pike, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Oct. 31, 1983, Ser. No. 546,795

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—23 **10 Claims**

1. A vehicle for powdered solder, said vehicle being essentially nonaqueous, removable from metal surfaces by water rinsing, fluent at a temperature below that at which said solder melts, and consisting essentially of a dispersion of flux in water soluble, normally solid synthetic wax, said flux consisting essentially of alkali metal hydroxide in liquid polyol.

4,460,415

METHOD FOR NITRIDING MATERIALS AT LOW PRESSURES USING A GLOW DISCHARGE

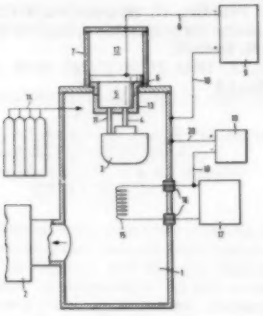
Antti S. Korhonen; Eero H. Sirvio; Martti S. Sulonen, all of Helsinki, and Heikki A. Sundquist, Espoo, all of Finland, assignors to Kymi Kymmene Oy, Helsinki, Finland

Filed Sep. 21, 1982, Ser. No. 420,944

Claims priority, application Finland, Sep. 30, 1981, 813032

Int. Cl.³ C23B *11/14*

U.S. Cl. 148—16.6 **3 Claims**



1. A method for nitriding work pieces with the aid of a glow discharge of nitrogen or a gas mixture containing nitrogen, comprising applying a gas pressure of from 1 to 100 mtorr and controlling the temperature of the work piece and the ion current to the work piece by a separate negatively biased filament.

4,460,416

METHOD FOR FABRICATING IN-SITU DOPED POLYSILICON EMPLOYING OVERDAMPED GRADUALLY INCREASING GAS FLOW RATES WITH CONSTANT FLOW RATE RATIO

Casimir J. Wonsowicz, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 15, 1982, Ser. No. 450,115

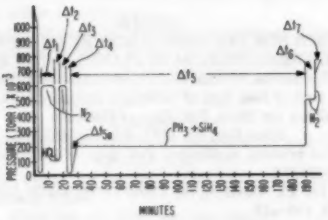
Int. Cl.³ H01L *21/205*

U.S. Cl. 148—174 **15 Claims**

1. A method of fabricating a film of in-situ doped polycrystalline silicon having a surface that is free of microscopic hillocks, said method including the steps of:

providing a deposition chamber and a wafer therein on which said film is to be fabricated; and

introducing one gas containing silicon atoms and another gas containing dopant atoms into said chamber with respective flow rates; wherein



said respective flow rates are gradually increased in an overdamped fashion over a start-up time interval of at least one minute from zero to respective steady state values while simultaneously the ratio of said respective flow rates is kept within 25% of the ratio of said steady state values.

4,460,417

METHOD OF MANUFACTURING INSULATING FILM AND ELECTRIC DEVICE UTILIZING THE SAME

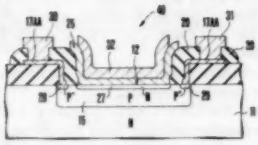
Katsumi Murase, Iruma; Teruo Tamama, Houya; Yoshihito Amemiya, and Yoshihiko Mizushima, both of Fuchu, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Japan

Filed Oct. 22, 1982, Ser. No. 436,035

Claims priority, application Japan, Oct. 27, 1981, 56-171554

Int. Cl.³ H01L *21/225, 21/265*

U.S. Cl. 148—187 **11 Claims**



1. A method of fabricating a transistor comprising the steps of:

(a) preparing a silicon substrate of one conductivity type which functions as a collector region of the transistor;

(b) forming on the substrate an insulating film having a first window, through which a portion of the substrate is exposed;

(c) forming an amorphous silicon layer containing at least boron on the entire exposed surface of the substrate;

(d) treating a portion of said amorphous silicon layer to form a second window smaller than said first window;

(e) partially oxidizing the remaining portion of said amorphous silicon layer inwardly from its surface to form a silicon oxide film, said amorphous silicon layer not oxidized being used as a base electrode of the transistor;

(f) forming a base region of a second conductivity type wherein said base electrode is disposed on said base region; and

(g) forming an emitter region of the first conductivity type in the substrate and an emitter electrode disposed on said emitter region respectively after exposing a surface of the substrate within said second window.

9. A method of manufacturing an insulating film comprising the steps of:

preparing a semiconductor substrate on which an insulating film is to be formed;

forming an amorphous silicon layer containing boron and

germanium on said substrate by chemical vapor deposition method using SiH_4, B_2H_6, and GeH_4 under low pressure; and oxidizing said amorphous silicon layer containing boron and germanium to obtain said insulating film.

4,460,418

ALUMINUM SHEET HAVING IMPROVED WELDABILITY

Werner Horn, Singen, and Jürgen Hennings, Gottmadingen, both of Fed. Rep. of Germany, assignors to Swiss Aluminum Ltd., Chippis, Switzerland

Division of Ser. No. 141,430, Apr. 18, 1980, Pat. No. 4,326,895. This application Jan. 25, 1982, Ser. No. 342,506

Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917627

Int. Cl.³ C22C *21/00*

U.S. Cl. 148—437 **4 Claims**

1. An aluminum body sheet characterized by improved weldability wherein said aluminum has been rolled to an intermediate thickness of from about 1.5 to 2.5 times the final gauge, then etched in an alkaline solution and then rolled to final thickness wherein said aluminum body sheet is characterized by a contact resistance substantially less than the contact resistance of an aluminum body sheet which has not been etched prior to rolling to final thickness.

4,460,419

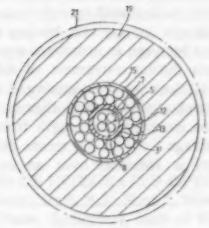
METHOD OF MAKING OPTICAL FIBER CABLES

Colin S. Parfree, and Peter Worthington, both of Southampton, England, assignors to International Standard Electric Corporation, New York, N.Y.

Division of Ser. No. 274,692, Jun. 17, 1981, Pat. No. 4,437,729. This application Aug. 11, 1983, Ser. No. 522,291

Int. Cl.³ H01B *13/06*; G02B *5/16*

U.S. Cl. 156—56 **7 Claims**



1. A method of making an optical fibre cable comprising:
providing a C-section metallic conductor extruded by a friction extrusion technique and having edge sections,
placing an optical fibre into said C-section conductor,
sizing said conductor to close said conductor and reduce the external diameter to a predetermined value, and
applying a tensile strength member around said conductor.

4,460,420

METHOD AND ARTICLES FOR REPAIRING GYPSUM WALLBOARD

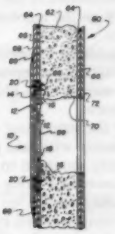
Paul Estrada, Mesquite, Tex., assignor to Sylver National Industries, Inc., Arlington, Va.

Division of Ser. No. 178,959, Aug. 18, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 420,474

Int. Cl.³ B32B *35/00*

U.S. Cl. 156—64 **10 Claims**

1. A method for covering a hole or surface indentation in laminated wallboard or the like having a plaster-like core and at least one layer of facing material forming an interior wall surface, said method comprising the steps of:
providing an article for covering said hole or indentation, said article having a substantially rigid plate portion larger than said hole or indentation, and formed of metal plate having a thickness sufficient that the strength of said plate portion is greater than said wallboard, said plate portion including a plurality of teeth projecting perpendicular to the plane of said plate portion and a plurality of spaced apart apertures formed in said plate portion, and a thin flexible cover portion covering said plate portion and said apertures and adapted to form the surface of said wallboard over said plate portion;
defining the peripheral outline of said plate portion on said interior wall surface around said hole or indentation and cutting through said facing material along said outline;



removing said facing material and some core material as required to form a first recess in said wallboard at least as deep as the thickness of said plate portion;
providing wallboard joint compound or the like for adhesively bonding said article to said wallboard and,
applying said article to said wallboard and pressing said plate portion into said recess and said cover portion into adhering engagement with said facing material so that at least some of said teeth engage said core around said hole or indentation and said apertures receive said joint compound for adhesive contact with said cover portion.

4,460,421

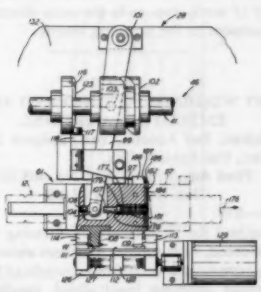
METHODS OF AND APPARATUS FOR INDEXING A REPETITIVELY PATTERNED STRIP PAST A PLURALITY OF WORK STATIONS

Raymond H. Booth, Walnutport; Jack J. Monahan, Allentown, and Fred J. Schneider, Northampton, all of Pa., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Nov. 29, 1982, Ser. No. 444,951

Int. Cl.³ B23P *21/00*

U.S. Cl. 156—64 **13 Claims**



1. A method of indexing a repetitively patterned strip past a plurality of work stations, which comprises:
sensing the position of a pattern in the strip relative to a

desired position of such pattern with respect to a first work station;

deterining whether there is a deviation of the sensed postion of such pattern from such desired position of the pattern with respect to such first work station;

feeding the strip by an indexing movement of an incremental feed mechanism between two travel limit stops of such feed mechanism;

upon determination of the existence of any such deviation, adjusting the position of said travel limit stops of the feed mechanism by an increment in a direction to decrease any such deviation of the sensed position of such pattern; and

simultaneously with any such adjustment of said travel limit stops, adjusting the position of at least one second work station located along a path of said strip in the same direction and by an increment of the same magnitude along the path of said strip as the increment of adjustment on said travel limit stops.

8. Apparatus for indexing a repetitively patterned strip past a plurality of work stations, comprising:

a base adapted to support the plurality of work stations in sequential alignment;

means for guiding the strip along a path along the base into working relationship with said plurality of work stations;

a feed head movably mounted to the base and adapted for reciprocating movement along the path of the strip, the feed head including means for selectively engaging and disengaging the strip within a cycle of such reciprocating movement to index the strip in a desired direction;

means, mounted to the base, for reciprocatably driving the feed head, such driving means having motion transfer element in engagement with the feed head, such motion transfer element having a free, linear excursion along the path of reciprocating movement which exceeds the desired increment for advancing the strip;

means, mounted to the base, for arresting the reciprocating movement of the feed head in both directions of travel after a predetermined distance of travel, to thereby determine the increment for advancing the strip during each cycle of reciprocating movement by the feed head;

first sensing means for sensing the position of a pattern in the strip relative to a desired position of such pattern with respect to a first work station of a plurality of the work stations;

means, responsive to such first sensing means sensing a deviation in the position of the pattern from such desired position with respect to such first work station, for adjusting the position of the arresting means with respect to the base in a direction opposite to such deviation, whereby the pattern in the strip becomes relocated toward a desired alignment with respect to such first work station; and

means, responsive to said first sensing means sensing a deviation in the position of the pattern from such desired position with respect to such first work station, for adjusting the position of at least one second work station of the plurality of work stations in the same direction as that of the adjustment of the arresting means.

4,460,422

FILAMENT WINDINGS METHOD AND APPARATUS EMPLOYING A TROWEL

Vesta F. Michael, San Antonio, Tex., assignor to Fiber Glass Systems Inc., San Antonio, Tex.

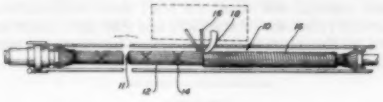
Filed Aug. 6, 1982, Ser. No. 405,792

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—175 **11 Claims**

1. In a method for simultaneously forming a plurality of filament-reinforced, resin tubular members about a plurality of substantially superposed, rotatable mandrels of formation, the steps comprising applying longitudinal, parallel reinforcing filaments about the periphery of each of such mandrels; mixing a hardenable resin-hardener liquid composition; dispensing liquid resin-hardener composition along the length of each of the rotatable mandrels as such mandrels rotate whereby such liquid is dispensed along a spiral path about said mandrel periphery onto said filaments; receiving a peripheral portion of a segment of each of said mandrels located beneath the point of resin dispensing in a concave trowel; locating said trowels associated with said mandrels in superposed relation with said trowels being of increasing length from top to bottom whereby spillage of resin hardener liquid from the ends of the upper trowels drops over an underlying trowel for collection by such underlying trowel; resiliently mounting each of said trowels against the filaments on said mandrels whereby said trowels may move with the engaged peripheries of the filament-covered mandrels and maintain constant contact thereagainst; and wiping the resin into the interstices of said longitudinal filaments by means of said trowels.

5. Apparatus for simultaneously forming a plurality of filament-reinforced tubular members about a plurality of rotating pipe forming mandrels comprising means associated with each mandrel for wrapping layers of reinforcing filaments saturated with a liquid, hardenable resin along the length of such each mandrel; trowel means for troweling resin for saturating said



filaments into the filament intersticies associated with each mandrel; each of said trowel means comprising an open channel of substantially uniform semicircular cross-section; said cross-section being of such size as to receive successive segments of an associated rotating mandrel therein in a loose fit; resilient means for biasing said trowel means upwardly against the rotating mandrel with which associated; reciprocally movable support means on which each of said trowel means is mounted and with which said trowel means is reciprocally movable along the length of such associated mandrel; and means for mounting each of such trowel means on said reciprocally movable support means; said biasing means providing continuous contact between an associated mandrel and each of said trowel means during movement of said trowel means relative to such mandrels; such mandrels and associated trowel means being in substantially vertical alignment; the lengths of said trowel means increasing in length from top to bottom whereby resin spillage from trowel means disposed above the lowermost trowel is received over an underlying trowel means.

4,460,423

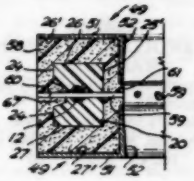
METHOD FOR MANUFACTURING A RACKET STRUCTURE

Omar J. Boonia, Juncal 1319, Buenos Aires, Argentina

Division of Ser. No. 337,150, Jan. 5, 1982, Pat. No. 4,394,015. This application Feb. 14, 1983, Ser. No. 466,137

Int. Cl.³ B29C *6/00*; B29D *3/00*

U.S. Cl. 156—185 **6 Claims**



1. A method for manufacturing a racket structure, comprising the steps of:

(a) providing a first elongate mold defining a center line;

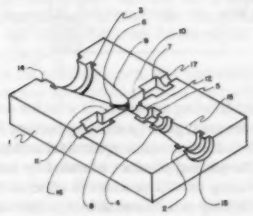
(b) locating through said mold in the longitudinal direction thereof, coaxial with said center line a cord member;
(c) prestressing said cord member;
(d) injecting a light-weight soft plastic in said mold to form a parallelepipedic core member having a first straight end portion, an intermediate portion and a second straight end portion, said core member defining an outer face, an inner face and a pair of opposite side faces, said intermediate portion further having between its outer face and said core member, spaced apart anchoring recesses which are crosswise arranged to said cord member and ending in said side faces;
(e) forming a glass fiber reinforcing layer around said core member;
(f) providing a further mold substantially of the shape of a racket, said further mold including a casing and a lid for said casing and each having a bottom;
(g) locating on the bottom of said casing and of said lid respectively a resilient, flat cover member having a head portion and a handle portion, each head portion being of oval ring shape including an upstanding inner endless oval rim, which rims are facing each other, but being spaced apart, upon the mold being in closed position;
(h) bending the intermediate structure achieved in the further mold to form two contiguous, parallel, straight end portions and an intermediate open oval shaped, arcuate portion, locating a bridge portion of the same intermediate structure between and connecting to the confluence of said straight end portions and arcuate portion to close said open oval shaped arcuate portion, locating the bent intermediate structure including said bridge in said casing and between said flat cover members, and closing the casing by means of said lid;
(i) perforating said closed oval shaped arcuate portion by an array of needles to define bores for the stringing of the racket to be produced and maintaining said needles within their perforations;
(j) injecting a hard plastic into said mold to cover said core member and becoming located between said flat cover members and bound thereto, whereby said glass fiber reinforcing layer becomes the reinforcement for said hard plastic;
(k) withdrawing said array of needles and thereafter the resulting racket structure from said further mold.

4,460,424

METHOD OF INTEGRATED OPTICAL SYSTEM

Rudolph G. Buser, Wall, N.J.; Neal T. Nomiyama, Reston, and Aubrey J. Dunn, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 27, 1981, Ser. No. 258,167
Int. Cl.³ B32B *31/04*
U.S. Cl. 156—242 **5 Claims**



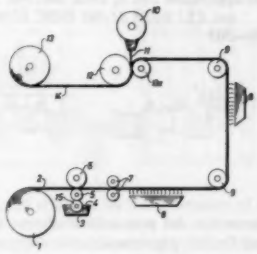
1. A method of forming an integrated optical system, with a plurality of optical elements, including the steps of:
(a) forming a substrate with respective cavities for said elements and with optical paths between said elements; and
(b) bonding said optical elements into said cavities.

4,460,425

METHOD FOR THE MANUFACTURE OF A PACKING MATERIAL WITH GOOD GAS-TIGHTNESS PROPERTIES

Jan A. I. Rausér, Lomma, and Gunnar Knudsen, Södra Sandby, both of Sweden, assignors to Tetra Pak International A.B., Lund, Sweden

Filed Feb. 2, 1983, Ser. No. 463,237
Claims priority, application Sweden, Feb. 10, 1982, 8200761
Int. Cl.³ B29D *7/02*
U.S. Cl. 156—244.23 **7 Claims**



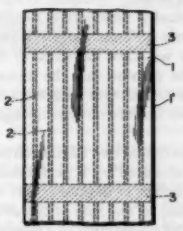
1. A method for the manufacture of a packing material with good gas-tightness properties, comprising the steps of pretreating a sheet or a web of paper or cardboard by coating at least one side of said sheet or web with a calcium compound, applying a layer of an aqueous solution containing polyvinyl alcohol and a thickener to said at least one side of said sheet or web of paper or cardboard, evaporating water in the solution by heating the web to form an emulsion layer thereon and, coating the remaining emulsion layer by extruding a thin polyolefin layer thereon.

4,460,426

COMPOSITE PAPER SHEETS ADAPTED TO MANUFACTURE BAGS AND PROCESS

Akio Saito, Tokyo, Japan, assignor to Showa Seitai Kogyo Kaisha Ltd., Tokyo, Japan

Filed May 29, 1981, Ser. No. 268,148
Claims priority, application Japan, Jun. 6, 1980, 55-75422; Dec. 5, 1980, 55-170852
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—277 **4 Claims**



1. A process for preparing a composite paper sheet, which comprises:
printing an oxidatively polymerizable oil base printing ink on less than an entire surface of a first paper sheet,
superposing a second paper sheet on the printed surface of said first paper sheet,

wrapping said first and second paper sheets into a roll, thereby applying pressure to the wrapped turns of said sheets, and

holding said roll for at least 24 hours to effect oxidative polymerization of said printing ink and thus bond said first and second paper sheets to each other.

4,460,427

PROCESS FOR THE PREPARATION OF FLEXIBLE CIRCUITS

Douglas M. Haney, Hockessin, Del., and John W. Lott, Tinton Falls, N.J., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 304,107, Sep. 21, 1981, Pat. No. 4,411,980. This application Jul. 5, 1983, Ser. No. 511,014

Int. Cl.³ B32B *31/00*; B65C *31/00*

U.S. Cl. 156—303 **20 Claims**

1. A process for the preparation of two flexible circuits formed from flexible photohardenable elements which comprises:

(a) exposing imagewise to actinic radiation each of the two flexible photohardenable elements comprising, in order,

(1) a flexible support,

(2) a dry, tacky photohardenable layer comprising a photohardenable composition, including at least one organic elastomeric polymeric binder compound, and, optionally

(3) a removable cover sheet,

(b) removing the cover sheet from each element, if present, and applying particulate metal to the unexposed image areas of each photohardenable layer; optionally

(c) heating the elements to a temperature in the range of 25° C. to 80° C.; then

(d) removing excess particulate metal; optionally

(e) fixing or binding the particulate metal to each photohardenable layer by heating, curing by exposing to actinic radiation, embedding mechanically, and combinations thereof;

(f) plating electrolessly or soldering the particulate metal bearing or metal containing areas thereby forming electrically conductive flexible circuits, said electrically conductive flexible circuits when having a thickness of 0.001 inch can be repeatedly bent around a structure having a diameter of 0.600 inch without breaking, cracking or delaminating, said electrically conductive flexible circuits when having thicknesses different from 0.001 inch, the diameter of said structure would be increased or decreased proportionally with the proviso that the minimum diameter of said structure would always be greater than 0.25 inch,

(g) placing the two flexible circuits in register face to face, and

(h) joining adhesively said two flexible circuits together, said circuits being separated by a perforated dielectric layer which allows contact at desired points when mechanical pressure is applied to one side of the circuit.

12. A process for the preparation of a membrane switch from a flexible circuit formed from a flexible photohardenable element which comprises

(a) exposing imagewise to actinic radiation a flexible photohardenable element comprising, in order,

(1) a flexible support,

(2) a dry, tacky photohardenable layer comprising a photohardenable composition, including at least one organic elastomeric polymeric binder compound, and, optionally

(3) a removable cover sheet,

(b) removing the cover sheet, if present, and applying particulate metal to the unexposed image areas of the photohardenable layer; optionally

(c) heating the element to a temperature in the range of 25° C. to 80° C.; then

(d) removing excess particulate metal; optionally

(e) fixing or binding the particulate metal to the photohardenable layer by heating, curing by exposing to actinic radiation, embedding mechanically, and combinations thereof;

(f) plating electrolessly or soldering the particulate metal bearing or metal containing areas thereby forming an electrically conductive flexible circuit, said electrically conductive flexible circuit when having a thickness of 0.001 inch can be repeatedly bent around a structure having a diameter of 0.600 inch without breaking, cracking or delaminating, said electrically conductive flexible circuit when having thicknesses different from 0.001 inch, the diameter of said structure would be increased or decreased proportionally with the proviso that the minimum diameter of said structure would always be greater than 0.25 inch;

(g) folding 180° the electrically conductive circuit having first and second sections having contactors and contacts, respectively, whereby the contactors and contacts are adjacent to each other, and

(h) inserting between said folded circuit a dielectric spacer having a plurality of openings therethrough for selective alignment with the contacts and contactors.

4,460,428

SCALING AND LABELING APPARATUS

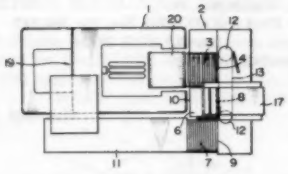
Kazuharu Teraoka, Tokyo, Japan, assignor to Teraoka Seiko Co. Ltd., Tokyo, Japan

Filed Mar. 30, 1983, Ser. No. 480,276

Claims priority, application Japan, Mar. 31, 1982, 57-46661[U]; Sep. 11, 1982, 57-158567; Sep. 14, 1982, 57-161272; Sep. 14, 1982, 57-140251[U]; Sep. 14, 1982, 57-140253[U]; Sep. 30, 1982, 57-148191[U]; Oct. 5, 1982, 57-151789[U]; Oct. 30, 1982, 57-165949[U]; Nov. 30, 1982, 57-210745[U]; Nov. 30, 1982, 57-210745

Int. Cl.³ B44B *9/00*

U.S. Cl. 156—360 **45 Claims**

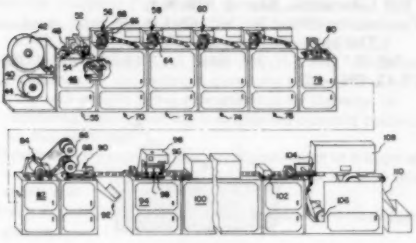


1. Scaling and labeling apparatus in which a scaling unit and a labeling unit are arranged in a moving passage for the packed product which is continuous to a terminal end of the transferring passage, the packed product is scaled by said scaling unit and a label relating to said product is adhered to the packed product by a labeling unit characterized in that the scaling unit is operated to accept the packed product on said transferring passage and scales said packed product while it is temporarily stopped, has a feeding-out passage for moving the packed product on the scaling unit in such a direction as crossing at a right angle to a direction of said transferring passage and a feeding-out means.

4,460,429
APPARATUS FOR MANUFACTURING FOIL SHAPES HAVING A CAST PLASTIC CAP

Charles M. Coscia, Upper Arlington, and W. Raymond Wirick, Sunbury, both of Ohio, assignors to The D. L. Auld Company, Columbus, Ohio

Filed Aug. 25, 1982, Ser. No. 411,718
Int. Cl.³ B29C *5/00*; B32B *31/18*; B41M *3/00*
U.S. Cl. 156—384 14 Claims



1. An apparatus for forming foil shapes cast with a plastic cap in which a continuous foil member of indefinite length is advanced along a horizontal path, comprising:

(a) means for advancing a continuous foil member along a horizontal path,

(b) means for cleaning and priming at least one surface of said foil member,

(c) means for providing an adhesive composition on one surface of said foil member,

(d) means for attaching a continuous release liner of indefinite length to the surface provided with adhesive,

(e) means for printing one surface of said foil member with a plurality of decorative patterns in one or more colors,

(f) means for embossing said foil member in registry with said decorative patterns,

(g) means for cutting foil shapes from said foil member in registry with said decorative patterns and removing selvage,

(h) means for casting a clear fluent plastic material onto said foil shapes to produce plastic capped shapes, and

(i) means for curing or otherwise hardening said plastic wherein said means (a)-(g) act on said continuous foil member and said means (h) and (i) act on said shapes on said continuous release liner.

4,460,430
APPARATUS FOR SPLICING TAPES

John J. Kissell, Dunwoody, and Joseph C. Sun, Lawrenceville, both of Ga., assignors to AT&T Technologies, Inc., New York, N.Y.

Division of Ser. No. 25,767, Apr. 24, 1981, abandoned. This application Sep. 2, 1982, Ser. No. 414,228
Int. Cl.³ B31F *5/06*; B65H *69/06*
U.S. Cl. 156—504 7 Claims

1. Apparatus for splicing tapes, said apparatus including:

advancing means for moving a first tape along a path of travel;

holding means for supporting an adhesively-backed tape, that is joined to a leading end portion of a second tape and that is to be connected to a trailing end portion of the first tape, spaced from the path of travel;

surface means being positioned along the path of travel for supporting the first tape;

first mounting means for mounting said holding means for movement between said surface means and a position spaced therefrom;

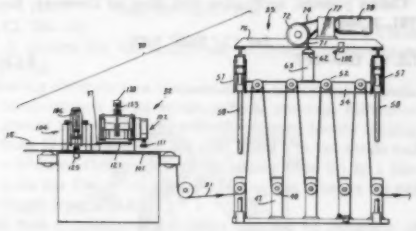
severing means for cutting the first tape to form a trailing end portion;

second mounting means for mounting said severing means for movement transversely across the first tape, said second mounting means including:

means for normally biasing said severing means in engagement with a portion of said surface means; and

means for spacing said severing means from said surface means;

moving means for causing said second mounting means to be moved transversely across the first tape to cause said severing means to cut said first tape and form a trailing end;



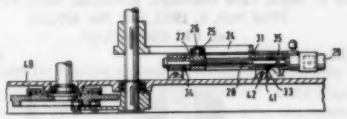
means rendered effective by the movement of said severing means across the first tape for causing said biasing means to release said severing means and allow said spacing means to become effective to space said severing means from said surface means; and

means responsive to said severing means being spaced from said surface means for moving the leading end portion of the second tape to engage the adhesively-backed tape with the trailing end portion of the first tape to connect the second tape to the first tape.

4,460,431
APPARATUS FOR FORMING TRANSVERSE SEAM WELDS OR SEPARATED TRANSVERSE SEAM WELDS IN TUBULAR OR SEMITUBULAR PLASTIC FILM WEBS

Josef Keller, Lessingstrasse 23, 4540 Lengerich i.W., BRD, and Walter Eckhardt, Brandenburger-Strasse 4, 4540 Bramsche, BRD both of Fed. Rep. of Germany

Filed Nov. 18, 1982, Ser. No. 442,713
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1981, 3147539; Sep. 15, 1982, 3234227
Int. Cl.³ B32B *31/18*, *31/20*
U.S. Cl. 156—515 12 Claims



1. Apparatus for forming transverse seam welds or separated transverse seam welds in tubular or semitubular plastic film webs, preferably for making bags, comprising a transverse welding device having jaws which are adapted to be cyclically opened and closed and between which the film web is intermittently advanced when the jaws are open and is held in position during the welding times and a rocker lever, which by means of a cam slot and a slide block imparts to the transverse welding device or to the film web a movement in the same or opposite direction relative to each other, which movement is derived from a rotating eccentric cam wheel, characterized in that a first lever is provided with a straight radial track, a first slide block is longitudinally guided in said track and is connected by a common pivot to a second slide block, which is movable in a straight slide track, which constitutes the base of a triangle, the legs of which are defined by the lever in both of

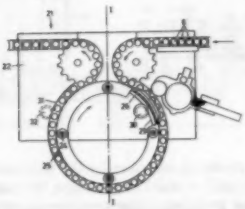
its end positions, the slide track is movable parallel to itself and adapted to be fixed in position in the machine frame, and one of the slide blocks has connected to it a second lever, which remains parallel to itself and is adapted to transmit the motion to the welding device or to the film web.

4,460,432

BOTTLE TABLE FOR LABELING MACHINES

Norbert Jörss, Albr. Altdorfer Str. 4, D-8402 Neutraubling, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,161
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134661
Int. Cl.³ B65C 9/02
U.S. Cl. 156—567 8 Claims



1. An assembly for receiving containers to be labeled and for moving the same in sequence between the stations of a labeling apparatus,

said assembly including an annular table for supporting said containers,

ring bearing means surrounding said table for supporting the same for rotation about a generally vertical axis,

an annular container receiving means disposed on the table concentric with the rotational axis for receiving the containers and for supporting the same vertically as said table is rotated,

annular drive means disposed on said table concentrically with the axis of rotation, and

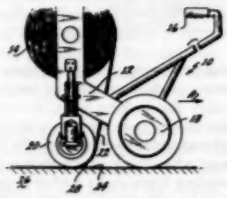
second drive means disposed within the annulus of said table for engaging said annular drive means for rotating said table about said axis.

4,460,433

PRESSURE ROLLER FOR ROOFING MACHINES

Walter K. Boyd, 3100 Maricopa, Riverside, Calif. 92507

Filed Nov. 4, 1982, Ser. No. 439,263
Int. Cl.³ E04D 15/06
U.S. Cl. 156—574 11 Claims



1. A pressure roller for pressing a web of material against an uneven surface, comprising:

(a) a rotatable flexible covering,

(b) means for maintaining said covering in a generally cylindrical shape while allowing the axis of said cylinder to be deformed;

(c) resilient non-rotatable support means for defining the axis of said cylinder and being resiliently deformable in a direction generally perpendicular to said surface but not in a direction generally parallel to said surface; and

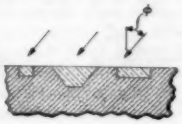
(d) said support means includes a leaf spring having its shortest dimension generally perpendicular to said surface.

4,460,434

METHOD FOR PLANARIZING PATTERNED SURFACES

Leo F. Johnson, Bedminster, and Dawon Kahng, Bridgewater Township, Somerset County, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 368,567, Apr. 15, 1982, abandoned.
This application Apr. 26, 1983, Ser. No. 487,113
Int. Cl.³ H01L 21/306; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—643 12 Claims



1. A method of device manufacturing comprising planarizing a pattern delineated material; said planarizing step comprising the steps of

depositing a first layer comprising a first material on the surface of said pattern delineated material; the surface of said first material being substantially planar; and

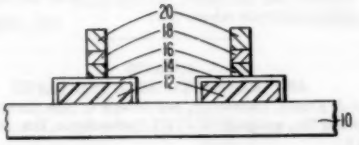
milling said surface with a particle beam at a non-normal angle of incidence and with a momentum whereby said first material and said material underneath said first material are eroded at substantially equal rates.

4,460,435

PATTERNING OF SUBMICROMETER METAL SILICIDE STRUCTURES

Jer-shen Maa, Somerset County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,530
Int. Cl.³ H01L 21/306; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—643 18 Claims



1. A method of forming an elongated strip of conductive material comprising a layer of doped polycrystalline silicon having thereover a layer of a refractory metal silicide on a substrate, said strip transversing a vertical step on the substrate and having a width less than about 1 micrometer, said method comprising:

(a) depositing a layer of doped polycrystalline silicon on the substrate;

(b) depositing a layer of a refractory metal silicide thereover;

(c) forming a patterned layer of resist material over the metal silicide layer, said pattern including an elongated strip having a width substantially larger than the desired width of said strip of conductive material;

(d) isotropically etching the exposed portion of the metal silicide layer and the underlying doped polysilicon layer to the substrate;

(e) irradiating and developing the remaining resist layer to

reduce the width of said elongated strip to the desired width of said strip of conductive material; and

(f) anisotropically etching the exposed metal silicide layer and the underlying doped polycrystalline layer to form said elongated strip.

4,460,436

DEPOSITION OF POLYMER FILMS BY MEANS OF ION BEAMS

Hiroyuki Hiraoka, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,458

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; B29C *17/08*

U.S. Cl. 156—643 **6 Claims**

1. A process for depositing a patterned polymer film on a substrate, said process being characterized by the steps of:

(1) confining a monomer vapor in a closed chamber containing said substrate;

(2) pattern-wise exposing said monomer vapor to a beam of ions to cause deposition of a polymer film on said substrate, and

(3) dry developing by etching said polymer film with oxygen plasma.

4,460,437

LARRY CAR FOR A COKING OVEN BATTERY

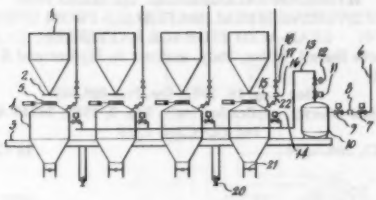
David B. Corry, Blackpool, England, assignor to Otto-Simon Carves Limited, Cheshire, England

Filed Dec. 21, 1982, Ser. No. 451,766

Claims priority, application United Kingdom, Dec. 30, 1981, 8139022

Int. Cl.³ C10B *31/04, 41/00*

U.S. Cl. 202—262 **6 Claims**



1. A larry car for transporting a charge of pre-heated coal along the top of a battery of coke ovens from a storage installation including a group of metering bins at one or more filling stations above the battery, to a corresponding group of charge holes in the top of each individual oven chamber to be charged, the larry car including a corresponding group of coal transfer hoppers each having valved inlet and discharge apertures at the upper and lower ends respectively and characterised by means to establish a sealed connection, when the larry car is at said one or more filling stations, between the valved inlet of each hopper and the interior of said storage installation, means for supplying an inert medium to the interior of each hopper when the larry car is over an oven being charged, such that the inert medium displaces the coal discharged, means for releasing the inert medium from each hopper as said hopper is filled with said pre-heated coal at the filling station, such that the pre-heated coal displaces the inert medium, a plurality of valves and control means therefor to maintain continuous isolation of the interior of each hopper from the atmosphere, a vent pipe being connected to each said transfer hopper and including a valve to enable the interior thereof to be separately connected, for the passage of dust-laden gas, to the interior of said storage installation during transfer of pre-heated coal from the metering bins to said transfer hoppers, said control means being adapted to supply said inert medium to said transfer hoppers during discharge of pre-heated coal therefrom, and to discontinue said supply of inert medium after discharge.

4,460,438

PROCESS FOR THE ELECTROLYTIC DEPOSIT OF CHROMIUM

René Tardy, , assignors to Association pour Recherche et le Development des Methodes et Processu Industriels (ARMINES), Paris, France

Continuation of Ser. No. 229,722, Jan. 28, 1981, abandoned. This application Oct. 18, 1982, Ser. No. 434,841

Claims priority, application France, Jan. 28, 1980, 80 01741

Int. Cl.³ C25D *3/06*

U.S. Cl. 204—51 **1 Claim**

1. A process for the electrolytic deposition of chromium comprising:

effecting electrolysis in communicating anodic and cathodic compartments at an anode-cathode potential difference greater than 6 volts, the cathodic current density ranging from 10 to 40 amperes per dm^2, using a nickel anode and a trivalent chromium bath containing from 0.1 to 1 ion-gram per liter of trivalent chromium and wherein the pH ranges from 1 to 1.5;

said bath consisting of a solution obtained by reduction of chromic acid in sulfuric acid medium by an excess of methanol and subsequent dilution of the resulting solution with water.

4,460,439

COATING PROCESS

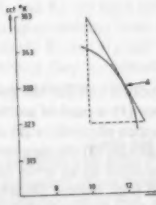
Alan R. Barlow, Berkshire, and Andrew Dorozkowski, Buckinghamshire, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Oct. 31, 1983, Ser. No. 547,352

Claims priority, application United Kingdom, Nov. 18, 1982, 8232873

Int. Cl.³ C25D *9/02, 13/06*

U.S. Cl. 204—56 R **8 Claims**



1. A process for coating a conductive substrate wherein the substrate is immersed in a coating composition comprising an aqueous medium and a dispersed coating material, the substrate is made a cathode in an electric circuit, and an electric current is passed between the cathode and a counter-electrode until a desired amount of coating material is deposited on the substrate, characterised in that:

(a) the coating material comprises a film-forming polymer which is sterically stabilised as a dispersion of particles in the aqueous medium and is free from stabilising ionic charges.

(b) the film-forming polymer comprises, or is associated with, a polymeric non-ionic hydrophilic moiety which is solvated by the aqueous medium and which contributes to the steric stabilisation of the film-forming polymer particles in the aqueous medium; and

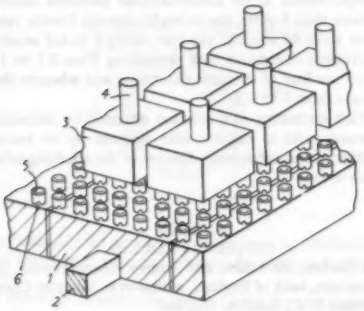
(c) the dispersion of film-forming polymer particles in the aqueous medium has a 'critical coalescence value (ccv)' which is more negative than −0.3 units.

4,460,440

ELECTROLYTIC PRODUCTION OF ALUMINUM AND CELL THEREFOR

James P. McGeer, Kingston, Canada, assignor to Alcan International Limited, Montreal, Canada

Filed Jun. 1, 1983, Ser. No. 499,916
Claims priority, application United Kingdom, Jun. 18, 1982, 8217711
Int. Cl.³ C25C 3/06, 3/08
U.S. Cl. 204—67 14 Claims



1. An electrolytic reduction cell for the production of aluminium, comprising a floor (1), a pool of molten aluminium (8) on the floor, a layer of molten electrolyte (9) above the molten metal pool, one or more anodes (3) dipping into the electrolyte layer and a cathode constituted by an array of upwardly open tubular elements (5) filled with molten aluminium and extending from the molten metal pool up into the electrolyte layer,

characterized in that each tubular element is provided with a lateral opening (6) at its lower end whereby the molten metal in the tube is in open communication with that in the molten metal pool, the internal diameter of the tube being chosen so that the level of molten metal therein is maintained at or close to the upper end of the tube by capillary action at all molten metal levels occurring during normal operation of the cell, the material of the tubular element being preferentially wetted by the molten metal in the presence of the cell electrolyte.

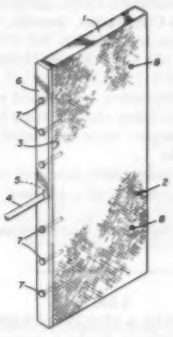
14. A method of operating the cell claimed in claim 1, which method comprises passing an electric current between the cathode and the anode, whereby molten aluminium is formed and collects in a pool around the tubular elements, and periodically tapping off the molten aluminium, the frequency and extent of tapping being chosen with regard to the length of the tubular elements, so that the level of the molten aluminium before tapping is at least 1 cm below the top of the elements and the lateral openings remain submerged in molten aluminium after tapping.

4,460,441

EXPANDED METAL AS MORE EFFICIENT FORM OF SILVER CATHODE FOR ELECTROLYTIC REDUCTION OF POLYCHLOROPICOLINATE ANIONS

William E. Domaing, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 31, 1982, Ser. No. 413,404
Int. Cl.³ C25B 3/04, 11/03, 11/06
U.S. Cl. 204—73 A 8 Claims



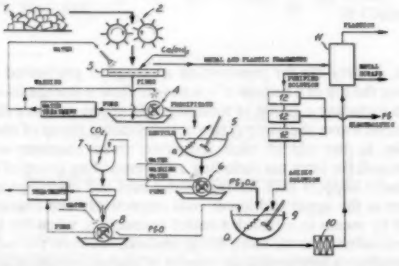
1. The improvement in the process of reducing polychloropicolinate anions in a basic, aqueous solution at an activated silver cathode, wherein said cathode is an expanded silver sheet.

4,460,442

HYDROMETALLURGICAL METHOD FOR RECOVERING METAL MATERIALS FROM SPENT LEAD-ACID STORAGE BATTERIES

Umberto Ducati, Milan, Italy, assignor to Hydrometal S.p.A., Italy

Filed Aug. 16, 1982, Ser. No. 408,540
Claims priority, application Italy, Sep. 2, 1981, 23745 A/81
Int. Cl.³ C25C 1/18
U.S. Cl. 204—114 14 Claims



1. A hydrometallurgical method for recovering metalliferous materials from spent lead-acid storage batteries, characterized in that it comprises the steps of separating from storage battery scraps the pole active material including mainly lead and lead dioxide in a finely divided form, mixing said active material with a strong alkaline solution selected from solutions of sodium hydroxide and potassium hydroxide in concentrations ranging from 50 to 300 g/l, the ratio of said active material to said alkaline solution being in the 1:1 to 1:100 range, heating said mixture at a temperature in the 100°–120° C. range, so as to react said lead with said lead dioxide to obtain minium (Pb_3O_4) and separating from said reaction mixture the minium as a product precipitate.

4,460,443

ELECTROLYTIC PHOTODISSOCIATION OF CHEMICAL COMPOUNDS BY IRON OXIDE ELECTRODES

Gabor A. Somorjai, and Christofer H. Leygraf, both of Berkeley, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Sep. 9, 1982, Ser. No. 416,351
Int. Cl.³ C25B 1/04
U.S. Cl. 204—129 9 Claims

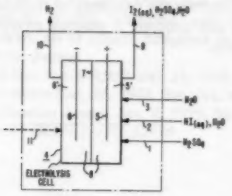
1. A process for the photocatalytic dissociation of chemical compounds comprising ionizing said chemical compounds in aqueous solution into respective cations and anions, contacting the aqueous solution with a first electrode comprised of an n-type iron oxide semi-conductor material, and with a second electrode comprised of a p-type iron oxide semi-conductor material, providing an electrical connection between said first and second electrodes and insulated from said aqueous solution, shining light energy in the visible region onto both said electrodes to induce an electrical potential therebetween and through said aqueous solution, and neutralizing and liberating the cations at the p-type iron oxide electrode and the anions at the n-type iron oxide electrode.

4,460,444

HYDRIODIC ACID-ANODE-DEPOLARIZED HYDROGEN GENERATOR

Nicholas J. Maskalick, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 6, 1983, Ser. No. 482,735
Int. Cl.³ C25B 1/04, 1/24
U.S. Cl. 204—129 10 Claims



1. A method of recovering hydrogen gas in an electrolysis cell having an anode and a cathode, said anode and cathode being separated by a hydrogen ion permeable membrane to form an anode compartment containing the anode and a cathode compartment containing the cathode respectively, each compartment containing aqueous sulfuric acid, which method comprises:

feeding an aqueous solution consisting essentially of aqueous hydriodic acid, containing hydrogen cations and iodide anions, and aqueous sulfuric acid, to the anode compartment of said electrolysis cell;

electrochemically liberating iodine by anodization of said iodide anions in the anode compartment in the presence of aqueous sulfuric acid, accompanied by a migration of said hydrogen cations across the hydrogen ion permeable membrane to the cathode compartment;

electrochemically generating hydrogen gas at the cathode, in the presence of aqueous sulfuric acid, from said hydrogen cations;

removing iodine from the anode compartment; and

removing and collecting hydrogen gas from the cathode compartment.

4,460,445

RADIATION-STABLE POLYOLEFIN COMPOSITIONS CONTAINING BENZALDEHYDE ACETALS

John W. Rekers, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

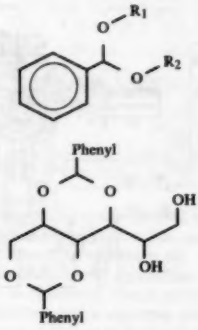
Filed Feb. 28, 1983, Ser. No. 470,774
Int. Cl.³ C08K 5/15, 5/06
U.S. Cl. 204—159.2 7 Claims

1. An olefinic polymer composition resistant to discoloration or degradation in physical properties when subjected to sterilizing amounts of radiation which comprises:

(a) an olefinic polymer selected from homopolymers and copolymers made from at least one, aliphatic, ethylenically unsaturated monomer containing from two to about ten carbon atoms:

(b) from about 100 to about 3,000 parts per million based on the weight of the total composition of a hindered phenolic stabilizer; and

(c) from about 100 to about 10,000 parts per million based on the weight of the total composition of a stabilizer selected from benzaldehyde acetal compounds of the formula:



wherein R_1 and R_2 are each independently selected from an alkyl group containing from 1 to about 20 carbon atoms or alternatively R_1 and R_2 may together with the oxygen atoms to which they are joined form a heterocyclic ring containing two oxygen atoms.

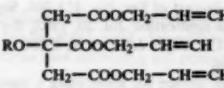
4,460,446

CROSSLINKING OF ETHYLENE POLYMERS

Herbert Bartl, Odenthal; Hans Rudolph, Krefeld, and Joachim Thörmer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 477,953
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1982, 3212538
Int. Cl.³ C08F 255/00, 255/04; C08J 3/24, 3/28
U.S. Cl. 204—159.17 4 Claims

1. In the process for crosslinking ethylene polymers and copolymers with radical forming agents in the presence of a co-agent/activator, the improvement which comprises said co-agent/activator comprising from 0.1 to 8 parts by weight of triallyl citrates corresponding to the formula



in which R represents hydrogen, a saturated or unsaturated aliphatic radical, an optionally substituted aromatic radical, an

optionally substituted aromatic-aliphatic radical or an acyl radical corresponding to the following formula

in which R^1 represents a saturated or unsaturated aliphatic radical or an aromatic radical.

4,460,447

APPARATUS FOR THE GALVANIC DEPOSITION OF ALUMINUM

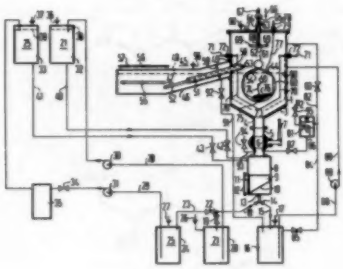
Siegfried Birkle, Höchstadt/A.; Klaus Stöger, Nuremberg, and Johann Gehring, Spardorf, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,127

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1982, 3236138

Int. Cl.³ C25D *17/20*

U.S. Cl. 204—213 **2 Claims**



1. Apparatus for replacing a cathode contact disposed within a galvanizing drum for containing electrolyte rotatably mounted within a fluid-tight galvanizing tank charged with an inert gas comprising axle stubs secured in opposed housing walls of said tank, said drum being seated for rotation at opposed end faces thereof on said axle stubs, a central bore extending through at least one of said axle stubs defining a hollow path between the interior of said drum and the exterior of said tank, an electrical cable extending through said central bore having an interior end for disposition in said drum and an exterior end for attachment to a power terminal, a cathode contact removably screw-thread attached to the interior end of said cable, said cathode contact's maximum cross-sectional area being slightly smaller than the minimum cross-sectional area of said central bore, a projection means about said cable for plugging said central bore as said cable extends therethrough, and an abutment member disposable at the interior end face of said central bore, such that said cathode contact can be drawn by said cable into engagement with said abutment member and unscrewed from said cable within said drum.

4,460,448

CALIBRATION UNIT FOR GASES

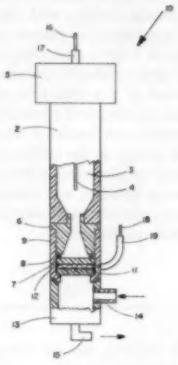
Duane K. Wolcott, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 431,408, Sep. 30, 1982, abandoned. This application Jul. 20, 1983, Ser. No. 515,721

Int. Cl.³ C25B *1/00, 1/26*; C25C *1/22*

U.S. Cl. 204—266 **10 Claims**

1. A calibration device for generating a gaseous mixture of known concentrations of oxidizing or reducing gases in an inert carrier gas comprising: an electrochemical cell for generating oxidizing and reducing gases, which includes a hollow body containing a first electrode and electrolyte, which electrolyte provides the ions that makeup the oxidizing or reducing gases; a second electrode at which the oxidizing or reducing gases are formed; an ion-exchange membrane which is disposed between and is in physical contact with the electrolyte and the second electrode, thereby permitting transfer of the ions forming the oxidizing or reducing gases through the ion-exchange membrane from the electrolyte to the second electrode while substantially containing the electrolyte in the hollow body; a porous membrane in physical contact with and



separating the second electrode from a mixing chamber outside the electrochemical cell through which the oxidizing or reducing gases defuse into the mixing chamber; means for passing a known quantity of direct electrical current between the first and second electrodes to generate a known quantity of oxidizing or reducing gases; and means for passing a known quantity of inert carrier gas over the porous membrane in the mixing chamber to entrain the oxidizing or reducing gases in the inert carrier gas and generate a gaseous mixture having a known concentration.

4,460,449

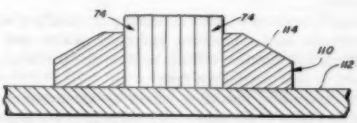
APPARATUS FOR MAKING A TOOL

Anthony J. Montalbano, Lake Barrington Shores, Ill., assignor to Amerace Corporation, New York, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,387

Int. Cl.³ C25D *17/12*

U.S. Cl. 204—281 **19 Claims**

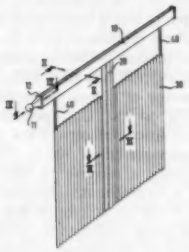


1. A bi-metallic pin to make tools for making optical quality parts, comprising an elongated pin having a first metallic portion having first and second ends, said first metallic portion being fabricated from a high strength metal; a second metallic portion, of lower strength than said first metallic portion and capable of being easily machined, being fixedly secured to said second end, and an optical pattern scribed in the end of said second metallic portion.

4,460,450
COATED VALVE METAL ANODE FOR THE ELECTROLYTIC EXTRACTION OF METALS OR METAL OXIDES

Konrad Koziol, Röthenbach, and Erich Wenk, Nuremberg, both of Fed. Rep. of Germany, assignors to Conradty GmbH & Co. Metallelektroden KG, Röthenbach, Fed. Rep. of Germany

Filed Feb. 9, 1983, Ser. No. 465,250
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1982, 3209138
Int. Cl.³ C05B 11/00; C05C 7/02
U.S. Cl. 204—290 F 19 Claims

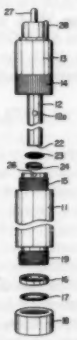


1. An electrode for the electrolytic extraction of metals or metal oxides, having an electrically conductive member which comprises a jacket of metal; a substantially solid core of metal which is a good electrical conductor arranged in electrically conductive connection with said jacket; and a metallic contact structure which is embedded in the core metal, and is connected by welding to an inner surface of said jacket.

4,460,451
STEAM-STERILIZABLE CARBON DIOXIDE SENSOR

Tomoaki Inoue, Machida; Yoichi Ishikawa, and Mitsunori Kaneko, both of Tokyo, all of Japan, assignors to Oriental Yeast Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 170,919, Jul. 21, 1980, Pat. No. 4,376,681. This application Jan. 25, 1983, Ser. No. 460,911
Claims priority, application Japan, Jan. 8, 1979, 54-1082
Int. Cl.³ G01N 27/30, 27/56
U.S. Cl. 204—415 3 Claims

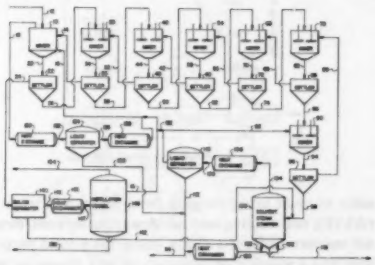


1. A carbon dioxide sensor comprising:
a pH glass electrode comprising a flat end;
a mesh spacer comprising a non-woven fabric gauze having a thickness in the range of 0.04 to 0.2 mm and a mesh opening of 0.2 to 2.0 mm and covering said flat end of said pH glass electrode;
an outer tube of heat-resistant material for containing a solution of electrolyte, said pH glass electrode being housed in said outer tube;
a lower cap attached to a lower end of said outer tube; and
a heat-resistant gas permeable membrane supported on said lower cap and held adjacent to said flat end of said pH glass electrode.

4,460,452
PROCESS FOR SEPARATING CRUDE OIL FROM MIXTURES COMPRISING FINELY DIVIDED INORGANIC SOLIDS, CRUDE OIL, AND WATER

Steven W. Johnson, Plano, and Robert H. Smith, Katy, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 6, 1982, Ser. No. 395,512
Int. Cl.³ C10G 1/04
U.S. Cl. 208—11 LE 10 Claims



1. A process for separating crude oil from mixtures consisting essentially of diatomaceous earth solids, said crude oil, and water, said process consisting essentially of:
(a) contacting said mixture with a paraffinic process-derived solvent stream to dissolve at least a portion of said crude oil from said mixture and a vaporous stream of said solvent in an amount sufficient to heat said mixture and said solvent in a contact zone to produce a vaporous stream containing at least a major portion of the water in said mixture and a first crude oil laden solvent and inorganic solids mixture;
(b) separating said vaporous stream containing said major portion of the water in said mixture from said mixture;
(c) separating at least a major portion of said inorganic solids from a major portion of said first crude oil laden solvent and inorganic solids mixture to produce a first inorganic solids stream and a first crude oil laden solvent stream; and,
(d) separating said crude oil from at least a major portion of said solvent in said first crude oil laden solvent stream.

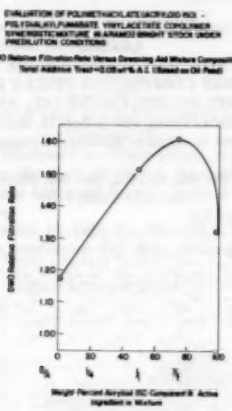
4,460,453
SOLVENT DEWAXING WAXY BRIGHT STOCK USING A COMBINATION POLYDIALKYL FUMARATE-VINYL ACETATE COPOLYMER AND POLYALKYL (METH-) ACRYLATE POLYMER DEWAXING AID

David A. Gudelis, and Lloyd E. Reid, both of Sarnia, Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 29, 1982, Ser. No. 426,710
Int. Cl.³ C10G 73/04
U.S. Cl. 208—33 5 Claims

1. A solvent dewaxing process comprising mixing a waxy hydrocarbon oil bright stock with dewaxing solvent and a dewaxing aid wherein said dewaxing aid comprises a mixture of:
A. poly di alkyl fumarate/vinyl acetate copolymers wherein the pendent alkyl side chain groups are from C_{16} to C_{24}+ carbons in length with an average pendent side chain length of predominantly (>50%) C_{20}; and

B. polyalkyl (meth-) acrylate polymer wherein said polymer is an ester of aliphatic alcohols of 10 to 20 carbons in length but predominantly (>50%) C_{14} and lower, with acrylic or methacrylic acid wherein components (A) and (B) constituting the dewaxing aid are used in a weight



ratio to each other ranging from about 4/1 to 1/100 of (A)/(B); and chilling said oil/dewaxing solvent/dewaxing aid mixture to form a slurry comprising solid particles of wax and a solution of dewaxed oil and dewaxing solvent and separating said wax from said solution.

4,460,454

PROCESS FOR PRODUCING PITCH FOR USING AS RAW MATERIAL FOR CARBON FIBERS

Hiroshi Iijima; Kunihiko Moriya, both of Tokyo; Kazuhito Tate, Kanagawa; Goro Muroga, Tokyo; Kazuhiro Yanagida, Kanagawa; Yoshikazu Nakamura, Kanagawa; Akiyoshi Inoue, Kanagawa, and Masahiro Higashi, Kanagawa, all of Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1983, Ser. No. 456,453

Int. Cl.[3] C10C *3/06, 3/08*

U.S. Cl. 208—40 2 Claims

1. A process for producing a pitch for using as a raw material for producing carbon fibers, comprising the steps of:

subjecting a petroleum heavy residual oil comprising a fraction having a boiling point of 300° C. or more to hydrogenation treatment in the presence of a catalyst under a condition comprising a temperature of 370° to 450° C., a pressure of 70 to 210 Kgf/cm^2, a liquid space velocity of 0.4 to 2.0 Hr^{-1} and a ratio of hydrogen/oil of 700 to 1,700 Nm^3/Kl,

removing a fraction having a boiling point of 500° C. or less by reduced pressure distillation,

subjecting the resulting reduced pressure distillation residual oil to solvent extraction treatment using a saturated hydrocarbon compound having 3 to 7 carbon atoms as a solvent under a condition comprising a ratio of solvent to oil of 3:1 to 15:1, a temperature of 50° to 230° C. and a pressure of 5 to 50 Kgf/cm^2, and

carrying out thermal modification of the extracted material by heating at 390° to 430° C.

4,460,455

PROCESS FOR PRODUCING PITCH FOR USING AS RAW MATERIAL FOR CARBON FIBERS

Kunihiko Moriya, Tokyo; Kazuhito Tate, Kanagawa; Goro Muroga, Tokyo, and Kazuhiro Yanagida, Kanagawa, all of Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1983, Ser. No. 456,454

Claims priority, application Japan, Jan. 13, 1982, 57-2648

Int. Cl.[3] C10C *3/06;* C10G *45/00*

U.S. Cl. 208—40 1 Claim

1. A process for producing a pitch used as a raw material for producing carbon fibers, which comprises the steps of:

(A) catalytically cracking a hydrogenated residual oil having a sulfur content of 0.7% by weight or less, a vanadium content of 10.0 ppm or less, a nickel content of 5.0 ppm or less and an asphaltene content of 1.0% by weight or less, said hydrogenated residual oil being produced by subjecting a petroleum heavy residual oil to hydrogenation treatment in the presence of a hydrogenation catalyst at a temperature of 370° to 450° C., a pressure of 70 to 210 kg/cm^{2}G, a liquid space velocity of 0.4 to 2.0 per hour and a ratio of hydrogen/oil of 700 to 1,700 Nm/Kl, or catalytically cracking a mixture of said hydrogenated residual oil and a hydrogenated distillate oil having a sulfur content of 0.4% by weight or less, said hydrogenated distillate oil being produced by processing a petroleum heavy residual oil by reduced pressure distillation to prepare a reduced pressure distillate oil having 95% or more of a distillate fraction having a boiling point of 300° to 550° C. at atmospheric pressure, and subjecting the resulting distillate oil to hydrogenation in the presence of a hydrogenation catalyst at a temperature of 300° to 410° C., a pressure of 40 to 150 kg/cm^{2}G, a liquid space velocity of 0.5 to 3.0 per hour and a ratio of hydrogen/oil of 260 to 1,700 Nm^3/Kl,

said catalytic cracking being carried out using a catalytic cracking catalyst at a temperature of 470° to 540° C., a pressure of 0.5 to 5.0 kg/cm^{2}G, and a ratio of catalyst:oil of 5:1 to 15:1 (by weight);

(B) distilling the resulting cracking oil to produce a high boiling point fraction having a boiling point of 300° C. or more; and

(C) thermally modifying the resulting fraction at a temperature of 390° to 430° C. and a heating time of 1 to 30 hours.

4,460,456

PROCESS FOR REDUCING RAMSBOTTOM CARBON TEST OF LONG RESIDUES

Jacobus Eilers, and Willem H. J. Stork, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 15, 1982, Ser. No. 388,776

Claims priority, application Netherlands, Jun. 29, 1981, 8103121

Int. Cl.[3] C10G *45/00, 47/02, 47/04;* C10C *3/08*

U.S. Cl. 208—89 9 Claims

1. A process for the preparation of a hydrocarbon mixture having an RCT of (a) %w and an initial boiling point of T°C., wherein an atmospheric residue I obtained in the distillation of a crude mineral oil, which atmospheric residue has an RCT of (b) %w and (d) %w of which boils below 520° C., is subjected to a catalytic hydrotreatment in order to reduce the RCT; the product obtained is separated by distillation into an atmospheric distillate and an atmospheric residue II having an initial boiling point of T°C.; either so much asphaltic bitumen is separated from the atmospheric residue II by solvent deasphalting that a deasphalted atmospheric residue having the desired RCT of (a) %w is obtained, or atmospheric residue II is separated by distillation into a vacuum distillate and a vacuum residue, from which vacuum residue so much asphaltic bitumen is separated by solvent deasphalting that a deasphalted vacuum residue is obtained which has such an RCT that, when it is mixed with the vacuum distillate, a mixture having the desired RCT of (a) %w is obtained; and the catalytic hydro-

treatment is carried out under such conditions as to obey the relation:

$$RCT \text{ reduction} = \frac{b-c}{b} \times 100 =$$

$$\frac{51.6-0.526\times d-0.115-T+2.55\times b+0.00115\times T\times d}{(1.426-1.15\times 10^{-3}\times T)(1-0.01\times d)} \pm 5,$$

where (c) is the RCT of the atmospheric residue II having an initial boiling point T°C. of the hydrotreated product.

4,460,457

NAPHTHA REFORMING PROCESS

Kirk R. Gibson, El Cerrito; Robert J. Houston, San Rafael; Thomas R. Hughes, Orinda, and Robert L. Jacobson, Hercules, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 18, 1980, Ser. No. 178,658
Int. Cl.³ C10G *35/06*
U.S. Cl. 208—139 **7 Claims**

1. In a process for reforming a light naphtha feedstock by continuously contacting said feedstock and a hydrogen-containing gas with a catalyst including a platinum component, a rhenium component, and a halogen component on a porous solid carrier at naphtha reforming conditions including a preselected reforming pressure between about 100 psig and about 500 psig, a preselected reforming temperature of about 750° F. to 1100° F.; and a preselected reforming hydrogen/hydrocarbon molar ratio of about 2 to about 10, said catalyst being used for an extended continuous on-stream period without regeneration, the improvement comprising:

increasing the selectivity of said catalyst for forming monocyclic aromatic hydrocarbons from aliphatic hydrocarbons in said feedstock by contacting said naphtha and hydrogen-containing gas with said catalyst under increased severity conditions including at least one of (a) a reduced pressure not greater than 90% of said preselected reforming pressure, (b) an increased temperature of 10° F. to 50° F. greater than said preselected reforming temperature, and (c) a decreased hydrogen/hydrocarbon molar ratio of 40% to 80% of said preselected reforming molar ratio for about 2 hours to about 200 hours during an initial portion of said on-stream period.

4,460,458

PROCESS FOR DEMETALIZING PETROLEUM UTILIZING STRONG SOLID-PHASE BRONSTED ACIDS

Malvina Farcasiu, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 14, 1982, Ser. No. 398,461
Int. Cl.³ C10G *45/00, 17/00, 17/06, 45/30*
U.S. Cl. 208—252 **14 Claims**

3. A process for removing a heavy metal constituent from a hydrocarbon oil containing the same comprising contacting said hydrocarbon oil in the liquid phase with a fluorinated sulfonic acid polymer, wherein the ratio by weight of sulfonic acid polymer to hydrocarbon oil is between about 0.5 and about 5 parts of polymer to 1 part of oil by weight.

4,460,459

SEQUENTIAL FLOTATION OF SULFIDE ORES

Douglas R. Shaw; John F. Spisak, both of Arvada; Jerome P. Downey, Parker, and Gary E. Butts, Arvada, all of Colo., assignors to Anschutz Mining Corporation, Denver, Colo.

Filed Feb. 16, 1983, Ser. No. 466,837
Int. Cl.³ B03B *1/00*
U.S. Cl. 209—9 **13 Claims**

1. In a sequential flotation process for the separation of components of a mineral mixture of the type wherein a primary grind ore pulp is routed sequentially through a series of flotation circuits having successive separation and concentration stages for separating and concentrating one of the mineral components, the improvement comprising:

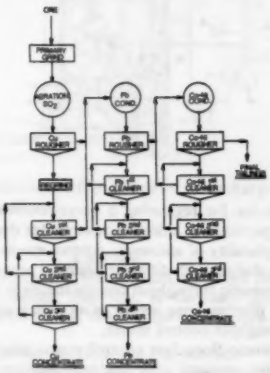
grinding a sulfide ore comprising a mixture of copper, lead and cobalt-nickel sulfide minerals in a carbonate matrix to provide a primary grind flotation pulp;

conditioning the pulp with SO_2 under intense aeration to depress lead and cobalt-nickel and promote copper;

routing the conditioned pulp to a copper flotation circuit having a roughing stage and at least one cleaning stage;

effecting flotation of the copper and separating a copper rougher concentrate from a copper rougher tailing product;

regrinding the copper rougher concentrate to liberate lead and cobalt-nickel minerals and conditioning the reground concentrate with SO_2;



cleaning the reground conditioned rougher concentrate and separating a first copper cleaner concentrate from a first copper cleaner tailing product;

routing at least the copper rougher tailing product directly to the lead flotation circuit wherein a lead concentrate is separated from a lead tailing product;

routing the lead tailing product from the lead flotation circuit to a cobalt-nickel flotation circuit wherein a cobalt-nickel concentrate is separated from a cobalt-nickel tailing product; and

recovering the copper, lead and cobalt-nickel concentrates from their respective flotation circuits.

4,460,460

BENEFICIATION OF ORES

Frank Cariello, Somerville, and Ross A. Kremer, Bell Meade, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

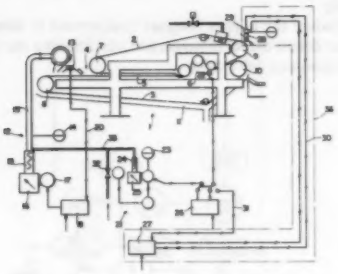
Filed Apr. 13, 1982, Ser. No. 367,832
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—166 **3 Claims**

1. An improved process for beneficiating phosphate ores using hard water in which there are at least two flotation steps, the first being a rougher float utilizing reagents consisting essentially of a fatty acid and a petroleum fraction and the second step being one in which reagents comprising fatty acid amine are used, the improvement comprising using deionized or softened water in the conditioning step prior to the rougher flotation, wherein hard water is used in said rougher flotation.

4,460,461
DEVICE FOR THE REGULATION OF A WATER-REMOVING MACHINE

Heinz Perchthaler; Rupert Syrowatka, and Werner Dietl, all of Graz, Austria, assignors to Maschinenfabrik Andritz Aktiengesellschaft, Austria

Filed Oct. 12, 1979, Ser. No. 84,444
Claims priority, application Austria, Oct. 27, 1978, 7677/78
Int. Cl.³ B01D *33/34*
U.S. Cl. 210—104 2 Claims



1. A device for regulating a water-removing or drainage machine, particularly a double-sieve sludge drainage machine having a plurality of automatic control means for adaptation thereof to sludges with different drainage properties, comprising an automatic throughput control means in which a sludge level in a filtering zone serves as an indication for the automatic throughput control means,

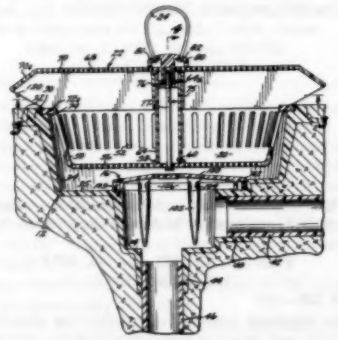
an automatic flocculant control means adapted to employ shearing strength of a sludge-flocculant mixture as an indication of drainage behavior,

and an automatic sieve velocity control means responsive in dependence upon drainage velocity.

4,460,462
LEAF TRAP AND MAIN DRAIN ASSEMBLY

Howard M. Arneson, San Rafael, Calif., assignor to Arneson Products, Inc., Corte Madera, Calif.

Filed May 7, 1982, Ser. No. 375,729
Int. Cl.³ B01D *23/00;* E04H *3/20*
U.S. Cl. 210—163 5 Claims



1. A swimming pool leaf trap and main drain assembly, comprising:

a concave main drain recessed in a swimming pool floor with its upper end substantially flush with the floor of said swimming pool, the lower end of said main drain being formed with a drain opening in communication with a return line;

a horizontal anti-vortex plate vertically aligned with and attached to said main drain and covering said drain opening and spaced thereabove to define a space that permits downward water flow therethrough but preventing inadvertent human or animal contact with said return line;

an open-topped basket vertically aligned with and above said main drain and having an apertured bottom and a plurality of apertures formed along its side walls, the upper periphery of said basket removably resting upon the outer edge of the upper end of said main drain, with the upper surface of said basket and the upper surface of main drain being substantially contiguous and flush with the upper surface of the swimming pool floor;

an apertured cover for said basket, the apertures in said basket and cover being sufficiently small to preclude the escape of leaves from the basket but of sufficient area to permit free downward flow of pool water through said basket and cover, and with the periphery of said cover extending downwardly to define a baffle shield;

rib means depending from said cover to said basket to coaxially support said cover spaced above said basket, with the circumferential space between the peripheries of said basket defining a leaf-admitting entrance to said basket and with the normal downward flow of swimming pool water through said main drain retaining leaves admitted into said basket trapped within said basket;

connection means releasably interconnecting said basket and said cover; and

a lifting ring secured to said cover whereby said basket and cover may be raised to the surface with leaves trapped in said basket being held therein by the downward force of water through said basket and cover created during upward movement of said basket and cover, and with said cover being released from said basket at the surface of the pool to effect removal of the leaves trapped therein.

4,460,463
ELECTROMAGNETIC FILTER

Satoshi Yoshida, Funabashi, Japan, assignor to Japan Organo Co., Ltd., Japan

Filed Jan. 17, 1983, Ser. No. 458,268
Claims priority, application Japan, Feb. 12, 1982, 57-17243
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—222 8 Claims

1. An electromagnetic filtering apparatus for the magnetic removal of particles from a fluid, comprising:

a filtering column;

magnetic material within said column;

an electromagnetic coil disposed around said column;

means for energizing said coil;

means for introducing fluid into and removing fluid from said column; and

means for removing from said magnetic material particles retained thereon;

said magnetic material consisting essentially of a plurality of one of cylindrical, prismatic and plate-like unit masses thereof layered horizontally and substantially uniformly within said column, each of said unit masses consisting essentially of a plurality of one of magnetic wires and magnetic tapes bundled with their longitudinal axes substantially arranged in parallel.

4,460,464

ELECTROMAGNETIC FILTER

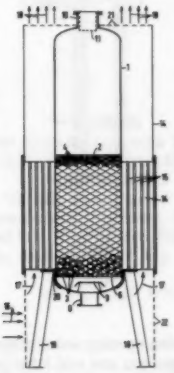
Gerhard Donath, Rathsberg, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,245

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3119034

Int. Cl.³ B01D *35/06*

U.S. Cl. 210—223 9 Claims



1. Electromagnetic filter, comprising a housing through which medium to be filtered flows, spherical bodies of ferromagnetic material disposed in said housing, a winding for magnetizing said spherical bodies, said spherical bodies having surfaces, and particles of magnetic permeability at least five times higher than that of said spherical bodies, said particles being disposed in substantially regular arrangement in and over the entire surface, respectively, of said spherical bodies with spacings of about 1 to 40 μm therebetween.

4,460,465

FILTER/DEMINERALIZER UNIT

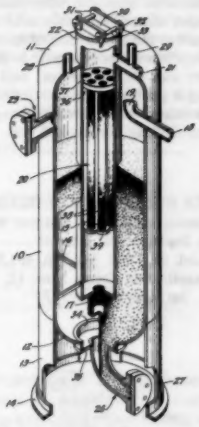
Stanley W. Zacharkow, Roebling, and William D. Morgan, Cinnaminson, both of N.J., assignors to Transamerica DeLaval, Inc., Princeton, N.J.

Filed Oct. 24, 1983, Ser. No. 544,834

Int. Cl.³ B01D *23/10*

U.S. Cl. 210—266 11 Claims

1. A self-contained filter/demineralizer unit for on-line processing of a flow of contaminated liquid, comprising an upstanding outer cylindrical tank with top and bottom end closures; said top closure including an elongate cylindrical inner casing in radially spaced relation within said tank, an annular wall closing the annular space between said tank and casing and suspending the casing to an extent approaching but short of the bottom closure of said tank, there being a portion of said casing projecting upwardly beyond said top closure, and means including a screen closing the lower end of said casing; and inlet-flow connection to the upper region of said tank, and an outlet-flow connection to that portion of the casing which projects beyond said top closure; resin-maintenance means including a selectively openable sluice connection to the upper region of said tank and a selectively openable sluice connection to the bottom closure of said tank, a replaceable resin bed in the annulus between said casing and said tank for demineralizing downward flow from said inlet connection to the bottom of said casing; a removable closure for the upper end of said casing, and means removably suspending a replaceable filter cartridge in sealed relation with the inner surface of said casing, whereby upward flow of demineralized liquid in said



casing may be subjected to filtration prior to discharge via said outlet-flow connection.

4,460,466

ADSORPTION FILTER WITH DESORPTION DEVICE

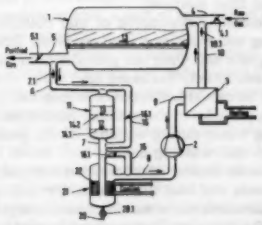
Karl Winter, Dortmund, Fed. Rep. of Germany, assignor to CEAG Verfahrenstechnik GmbH, Bork, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,822

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 3139369

Int. Cl.³ B01D *15/00, 53/04*

U.S. Cl. 210—274 14 Claims



1. An adsorption filter for purifying feed gases and liquids by removing impurities therefrom and a desorption device for regenerating the adsorption filter charged with adsorbed impurities and for recovering the desorbate comprising a vessel containing a body of adsorption material, a feed inlet in the vessel for the introduction of the feed containing impurities for passage through the body of adsorption material for the removal of impurities therefrom, a purified feed outlet in the vessel for the discharge of feed from which the impurities have been removed, feed damper means for blocking the flow of feed into the vessel and purified feed damper means for blocking the flow of purified feed from the vessel, the combination therewith of a blower for circulating in a closed loop with a loop inlet and a loop outlet a substantially inert gaseous desorption medium through the loop inlet into the vessel and through the body of adsorption material to desorb the same, a heat exchanger in the loop preceding the loop inlet into the adsorption filter, said inert gaseous desorption medium passing in indirect heat exchange with a heating medium in the heat

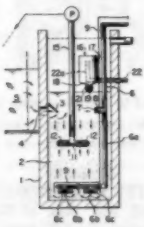
exchanger, a condenser in the loop between the loop outlet of the adsorption filter and the heat exchanger wherein the inert gaseous desorption medium containing desorbate is cooled and the desorbate condensed, inert gas inlet damper means and inert gas outlet damper means in the loop near the vessel which can be opened to permit the circulation of inert gas during the desorption, and a sorption water reservoir in the loop between the adsorption filter and the condenser, said sorption water reservoir containing a packed bed of water-selective adsorptive material and a regenerative heat exchanger with a heat accumulator mass preceding this packed bed.

4,460,467

WATER PURIFICATION DEVICE

Yoshihiko Ueda, Yamaguchi, Japan, assignor to Takara Kogyo Co., Ltd., Tokyo, Japan, a part interest

Filed Jul. 26, 1982, Ser. No. 401,985
Claims priority, application Japan, Mar. 12, 1982, 57-39091
Int. Cl.³ B01D *23/24*
U.S. Cl. 210—276 **5 Claims**



1. A water purification apparatus in which a granular filter medium filters water to be filtered, comprising:

a tank;

means for providing water to be filtered into said tank;

water collection means, disposed in said tank beneath the granular filter medium, for collecting water filtered in the granular filter medium;

washing means, independent of said collection means, for injecting and removing washing water from said tank so as to agitate and wash the granular filter medium therein;

a filter mesh loosely enclosing said water collection means so as to be movable thereover in response to contact with moving particles of the granular filter medium agitated by washing water during washing of the granular filter medium by said washing means;

sliding contact means, interposed between said water collection means and said filter mesh, for slidingly contacting said filter mesh when said filter mesh moves during washing of the granular filter medium by said washing means, so as to disengage matter adhered to the inner and outer surfaces of said filter mesh.

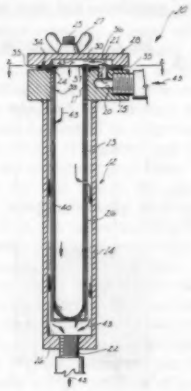
4,460,468

LIQUID FILTER WITH COMBINED FILTRATION BAG AND LID SEALING GASKET

H. William Morgan, Michigan City, Ind., assignor to Filter Specialists, Inc., Michigan City, Ind.

Filed Apr. 20, 1983, Ser. No. 486,798
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—445 **3 Claims**

1. In a liquid filter including a housing having a side wall and a bottom wall, an inlet port and an outlet port, said housing having an opening defined by the upper end of said side wall, a lid spanning said housing opening, a removable filtration bag suspended within said housing and having an open upper end positioned between said inlet and outlet ports, the improvement wherein said inlet port includes a tubular protrusion extending upwardly from said housing side wall upper end in a spaced relationship from said housing opening, said lid including portions spaced above said bag open upper end and said inlet port protrusion to define a liquid flow passage between the protrusion and bag open upper end over a removable flexible generally planar seal, said seal unitarily attached to said bag about said bag open upper end, said seal extending peripherally about said housing opening and positioned between said housing side wall upper end and said lid to provide complete peripheral liquid sealing engagement between the lid and the housing, said seal having an opening spaced from said bag open upper end, said seal fitting at its said opening in sealing engagement around said inlet port protrusion.

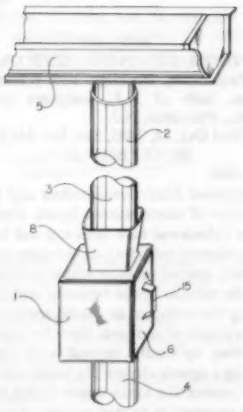


4,460,469

LEADER PIPE INSERT

Marino Francesconi, Jr., 94 Oak Dr., Pleasantville, N.Y. 10570

Filed Oct. 23, 1981, Ser. No. 314,233
Int. Cl.³ B01A *35/02*
U.S. Cl. 210—447 **1 Claim**



1. A device associated with a leader pipe for receiving rain water from a leader pipe and discharging it into additional leader pipe or standpipe, thence into a drywell, comprising

(a) a housing for receiving and holding an accumulating drawer,

(b) an accumulating drawer for insertion in the housing for separating leaves and debris from rain water, the drawer

containing and including a screen, which is cone-shaped, rounded on top, and concave downwards with the base fixed in the bottom of the accumulating drawer.

4,460,470

PROCESS AND APPARATUS FOR THE BIOLOGICAL PURIFICATION OF PHOSPHATE-CONTAINING WASTEWATER

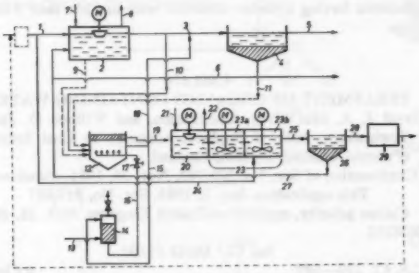
Hans Reimann, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 23, 1983, Ser. No. 468,835

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 3206444

Int. Cl.³ C02F 3/30

U.S. Cl. 210—605 **40 Claims**



1. In a process for the biological purification of phosphate-containing wastewater wherein the wastewater is aerated in a tank in the presence of activated sludge for degrading of organic hydrocarbon compounds and absorption of phosphate by microorganisms present in the activated sludge, the wastewater-activated sludge mixture then being withdrawn from the aerated tank and divided, in a post clarification stage, into purified, essentially phosphate-free water and phosphate-containing sludge, with the phosphate-containing sludge returned, at least in part, as recycle sludge into the aeration tank, the improvement comprising: feeding at least one of a partial stream of the wastewater-activated sludge mixture treated in the aerated tank and discharged therefrom, and at least one of a partial stream of the recycle sludge from the post-clarification stage, to a flotation separation stage for separation into a low-phosphate flotage and a thickened high-phosphate flotage sludge; separately withdrawing the low-phosphate flotage from the flotation separation stage and the thickened high-phosphate flotage sludge; heating the high-phosphate flotage sludge to a temperature above ambient temperature, and after heating, anaerobically treating the high-phosphate flotage sludge, and then mixing this high-phosphate flotage sludge with an aqueous phase; subjecting the aqueous phase-flotage sludge mixture to a phosphate separation to produce a low-phosphate sludge and a phosphate-enriched liquid; and recycling the low-phosphate sludge into the aerated tank and conducting the phosphate-enriched liquid to a further treatment step.

4,460,471

FLOW-CONTROL PROCESS FOR AN OXIDATION DITCH

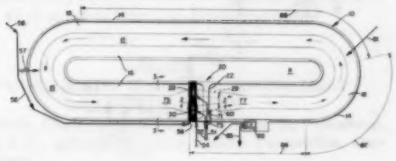
John H. Reid, 7 Stansbury Ct., Fredericksburg, Va. 22401

Continuation of Ser. No. 848,705, Nov. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 649,995, Jan. 19, 1976, abandoned. This application Mar. 5, 1982, Ser. No. 355,150

The portion of the term of this patent subsequent to Jul. 14, 1998, has been disclaimed.

Int. Cl.³ C02F 3/20

U.S. Cl. 210—629 **16 Claims**



1. In an activated sludge process for aerobically treating a continuous stream of wastewater by continuously admixing said stream with a quantity of circulating mixed liquor which:

(a) contains a biomass including heterotrophic aerobic, heterotrophic facultative, and autotrophic microorganisms which exist at least partially as a bacterial floc and for which said wastewater is a food source at a food-to-microorganism ratio by weight varying over a range of 0.01 to 2.5,

(b) flows translationally within the endless channel, having sides and a bottom, of an oxidation ditch at a circulation velocity that is sufficient to maintain said floc in a state of suspension therewithin without interruption by a clarification zone within said channel so that said admixing occurs once per circuit-flow cycle of said oxidation ditch,

(c) is diminished by a portion thereof being continously discharged to a settling means for separating clarified liquor from settled sludge, and

(d) is increased by at least a part of said settled sludge being continuously returned to said channel,

the improvement comprising the following steps:

A. dividing said mixed liquor and said channel into upstream liquor within an intake channel and downstream liquor within discharge channel;

B. pumping all of said upstream liquor downwardly and from said intake channel to said discharge channel;

C. introducing compressed air to said all of said upstream liquor being pumped in Step B; and

D. regulating said pumping and independently regulating said introducing of compressed air in order to:

(1) form a liquor-air mixture of said all of said upstream liquor being pumped and of said compressed air being independently introduced and generate a pressure upon said mixure, for a selected distance, that is greater than the hydraulic pressure at said bottom,

(2) transfer oxygen from said liquor-air mixture to said all of said upstream liquor to form an aerated mixed liquor as said downstream liquor,

(3) completely prevent backmixing of said aerated mixed liquor to said intake channel, and

(4) increase the log mean driving force across the intake and discharge ends of said discharge duct, thereby decreasing the energy required for dissolving a given quantity of oxygen in said mixed liquor and increasing the oxygen transfer efficiency while providing said repetitive aerobic treatment to said all of said mixed liquor within said endless channel and translationally circulating said mixed liquor at said sufficient circulation velocity to maintain said bacterial floc in said state of suspension.

4,460,472

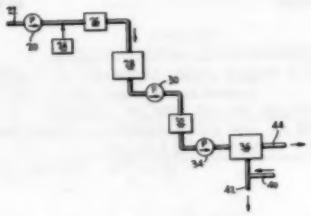
SCALE INHIBITOR FOR REVERSE OSMOSIS WATER PURIFICATION SYSTEM

Anita G. Kapiloff, Treasure Island, Fla., and Randolph T. Hatch, Silver Spring, Md., assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 222,760, Jan. 6, 1981, Pat. No. 4,386,005. This application Feb. 18, 1983, Ser. No. 467,867

Int. Cl.³ C02F 5/14

U.S. Cl. 210—639 8 Claims



1. A method of inhibiting the growth of scale in a reverse osmosis water purification system comprising injecting into the infeed water of said reverse osmosis water purification system a sufficient amount of a composition consisting essentially of from 1 to 0.05 part by weight of polyacrylic acid having a molecular weight of from 1,000 to about 10,000 and from 0.05 to 1 part by weight of phytic acid to inhibit the growth of scale in said reverse osmosis water purification system.

4,460,473

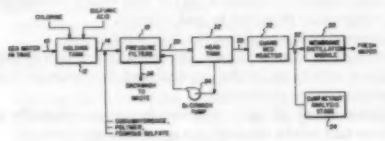
MEMBRANE DISTILLATION METHOD

Daniel J. Curtin, Danville, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 5, 1981, Ser. No. 222,818

Int. Cl.³ B01D 31/00, 13/00

U.S. Cl. 210—640 12 Claims



1. In a distillation system wherein a liquid distilland and a liquid distillate are separated by a porous membrane through which the distillate passes in a vapor phase, the improvement comprising the step of pretreating said distilland to remove surfactants therefrom in order to prevent liquid intrusion into said membrane.

4,460,474

PROCESS FOR THE EXTRACTION OF CESIUM IONS FROM AQUEOUS SOLUTIONS USING AN ADDUCT COMPOUND IN SOLID FORM COMPRISING A MACROCYCLICAL POLYETHER AND AN INORGANIC HETEROPOLY ACID

Ewald Blasius, Saarbrücken, and Karl-Heinz Nilles, St. Ingbert, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,800

Claims priority, application European Pat. Off., Aug. 31, 1981, 81106782.6

Int. Cl.³ B01J 39/04

U.S. Cl. 210—679 19 Claims

1. Process for the extraction of cesium ions from an aqueous solution with an adduct compound in solid form containing a crown ether and an inorganic heteropoly acid component which is stable in strong acid and oxidizing medium, comprising: employing as the adduct compound an adduct of (a) a crown ether selected from benzo-15-crown-5; dibenzo-21-crown-7; and dibenzo-30-crown-10; with (b) a heteropoly acid selected from 12-molybdophosphoric acid; 12-tungstophosphoric acid; 12-molybdosilicic acid; and 12-tundgsosilicic acid; or an Na, K, Tl, or NH_4 salt of the heteropoly acid, with the adduct of benzo-15-crown-5 with component (b) having a molar ratio of crown ether to heteropoly acid or heteropoly acid salt of less than or equal to 2:1.

4,460,475

METHOD FOR TREATMENT OF MUTAGENS

Hikoya Hayatsu, Okayama, and Masahide Nakano, Hirakata, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 25, 1983, Ser. No. 479,136

Claims priority, application Japan, Mar. 30, 1982, 57-53384

Int. Cl.³ B01D 15/00

U.S. Cl. 210—674 12 Claims

1. A method treatment of a mutagen-containing solution, which comprises adsorption of a mutagenic substance present substantially in a solution by a solid adsorbent bearing a covalently bound phthalocyanine compound, said adsorbent being prepared by coupling a phthalocyanine compound having a reactive group with an organic solid material, said mutagenic substance having a planar structure with not less than 3 fused rings.

4,460,476

TREATMENT OF ORGANICS CONTAINING WATER

David J. A. McCaffrey, Cheltenham, and William D. Jones, Tewkesbury, both of England, assignors to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 325,902, Nov. 30, 1981, abandoned. This application Aug. 3, 1983, Ser. No. 519,887

Claims priority, application United Kingdom, Nov. 28, 1980, 8038282

Int. Cl.³ B01D 15/00

U.S. Cl. 210—689 4 Claims

1. In the method of drying an organic solvent miscible with water to a water content of at most 0.1% by weight by passing the solvent through a column containing a dehydrated molecular sieve, the improvement comprising treating a solvent selected from the group consisting of isopropanol, ethanol, industrial methylated spirit, methyl isobutyl ketone, acetone, tetrahydrofuran and pyridine containing from 4 to 25% by weight of water at a superficial velocity of from 0.25 to 7.5 cm/min in a column having a ratio of length to mass transfer zone defined as the volume of liquid at between 5 and 30% by weight of the feed water content passing through the column divided by the cross-sectional area of the column of at least 4 to 1.

4,460,477

USE OF A CARBOXYLIC FUNCTIONAL POLYAMPHOLYTE TO INHIBIT THE PRECIPITATION AND DEPOSIT OF SCALE IN AQUEOUS SYSTEMS

Christine A. Costello, Coraopolis, and Gary F. Matz, Pitcairn, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

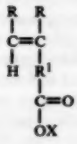
Filed Aug. 25, 1982, Ser. No. 411,174

Int. Cl.³ C02F 5/10

U.S. Cl. 210—701 8 Claims

1. A method of inhibiting the precipitation and deposition of calcium phosphate in an aqueous system comprising adding to the aqueous system at least 0.1 ppm, of a carboxylic functional polyampholyte, or the salt thereof, having an intrinsic viscosity of 0.05 to 4.3 dl/g measured in 1.0M sodium chloride, prepared from:

(i) 22.5 to 90%, by weight, of at least one carboxylic functional monomer of the formula:



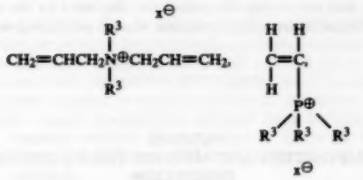
wherein

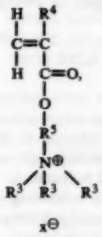
R, which may be the same or different, is hydrogen or an alkyl group of from 1 to 3 carbon atoms,

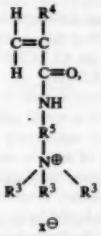
R^1 is a straight or branched chain of from 0 to 3 carbon atoms, and

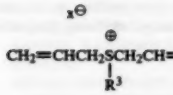
X is hydrogen or an alkali or alkaline earth metal;

(ii) 2.5 to 20%, by weight, of at least one cationic-containing monomer selected from the group consisting of:

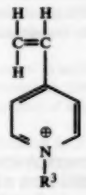








and



wherein

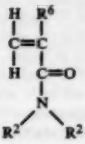
R^3 is hydrogen, or an alkyl group of from 1 to 3 carbon atoms,

R^4 is a hydrogen or an alkyl group of from 1 to 3 carbon atoms,

R^5 is a straight or branched chain of from 1 to 12 carbon atoms, and

X is an anion; and

(iii) 5 to 67.5%, by weight, of at least one non-ionic monomer of the formula:



wherein

R^6 is hydrogen, a phenyl or an alkyl group of from 1 to 3 carbon atoms,

R^2, which may be the same or different, is a hydrogen, or an alkyl group of from 1 to 3 carbon atoms.

4,460,478

ORTHOSILICATE ESTER CONTAINING HEAT TRANSFER FLUIDS

Paul H. Mohr, Chappaqua, and Eugene A. Zientek, Thornwood, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1982, Ser. No. 430,374

Int. Cl.³ C09K *5/00*; F28F *23/00*

U.S. Cl. 252—75 **11 Claims**

1. A corrosion-inhibitive heat transfer composition concentrate comprising at least one glycol and at least one orthosilicate ester, said concentrate having a pH of between about 6.0 and about 8.0, and said concentrate containing an amount of orthosilicate ester sufficient to provide at least about 25 ppm and not greater than 4000 ppm of silicon in the concentrate.

4,460,479

METHOD FOR POLISHING, DEBURRING AND DESCALING STAINLESS STEEL

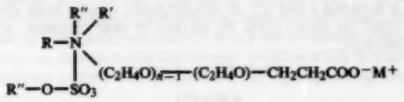
Gerard W. Mulder, Rte. #1, Milton, Wis. 53564

Continuation of Ser. No. 942,273, Sep. 14, 1978, abandoned, which is a continuation of Ser. No. 606,089, Aug. 20, 1975, abandoned. This application Sep. 3, 1981, Ser. No. 299,137

Int. Cl.³ C09K *13/06*; C11D *7/08*

U.S. Cl. 252—79.4 **2 Claims**

1. The method of polishing, descaling and de-burring stainless steel, comprising the steps of (1) preparing a bath containing in combination ferric chloride, a surfactant, hydrochloric acid, and nitric acid, the surfactant being a quaternary ammonium surfactant having the formula:



wherein:

n is an integer in the range of 1–15 inclusive;

R is a hydrocarbon radical having from 4 to 22 carbon atoms and selected from the groups consisting of a straight or branch chain aliphatic, cycloaliphatic, aliphatic aromatic with the aliphatic portion being attached to an aromatic nucleus and having at least 4 carbon atoms;

R′ is a radical selected from the class consisting of R groups, $(C_2H_4O)_{x-1}—C_2H_4O$ groups and $(C_2H_4O)_{x-1}—C_2H_4O—CH_2CH_4O—CH_2CH_2COOM$ groups;

M is an alkali metal or is hydrogen;

R″ is a lower alkyl radical containing from 1–3 carbon atoms;

where R′ contains C_2H_4O groups, n−1 will be replaced by y−1, in which case x+y will be equal to n, and n is an integer in the range of 2–15, and wherein hydrochloric acid is present in an amount of about 1 to about 15 parts by weight, nitric acid is present in an amount of about 0.75 to about 6 parts by weight, the quaternary ammonium surfac-

tant is present in an amount of about 0.05 to about 5 parts by weight, phosphoric acid or sulfuric acid is present in an amount of up to about 30 parts by weight, ferric chloride is present in an amount up to about 10 grams/liter, and the remainder to 100 parts is water, (2) maintaining the temperature between 100° F. and 210° F., and (3) immersing the stainless steel in said bath, wherein the ferric chloride acts as a catalytic agent to effect consistent polishing action thereby obtaining stainless steel of a commercially acceptable grade.

4,460,480

PROTEIN HYDROLYZATE COMPOSITIONS FOR FIRE FIGHTING CONTAINING PERFLUOROALKYL SULFIDE TERMINATED OLIGOMERS

Eduard K. Kleiner, Pound Ridge; Thomas W. Cooke, Mahopac, and Robert A. Falk, New City, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 13, 1980, Ser. No. 129,872

Int. Cl.³ A62D *1/00*; C07D *211/70, 211/82, 213/56*

U.S. Cl. 252—8.05 **6 Claims**

1. A protein hydrolyzate aqueous foam-forming concentrate composition for making a fire-fighting foam after dilution with from about 15 to about 35 times its volume of water which comprises

a water solution of a fire fighting foam-forming protein hydrolyzate containing sufficient protein hydrolyzate to essentially completely stabilize the foam produced after dilution, and

in dissolved or dispersed condition an oligomer of the formula

$$R_f\text{—E—S—M}_1]_x[M_2]H$$

wherein R_f is a straight or branched chain perfluoroalkyl of 4 to 18 carbon atoms, perfluoroalkyloxyalkylene of 5 to 19 carbon atoms, or mixtures thereof;

E is a straight or branched chain alkylene of 1 to 12 carbon atoms, —CON(R')—E'—, —SO_2N(R')—E'—, —E'—CON(R')—E'—, —E''—S—E'—, —E''—N(R')—E—, or —E''—SO_2N(R')—E'—, where R' is hydrogen or alkyl of 1 to 6 carbon atoms, E' is alkylene of 2 to 8 carbon atoms and E'' is alkylene of 1 to 4 carbon atoms; —M_1— represents a hydrophilic monomer unit derived from a hydrophilic vinyl monomer and —M_2— represents a hydrophobic monomer unit derived from a hydrophobic vinyl monomer;

the sum of x and y is between 4 and about 500; and x/(x+y) is between 1 and 0.5; in concentration to give from about 0.003 to about 0.3% by weight of said oligomer after dilution.

4,460,481

SURFACTANT WATERFLOODING ENHANCED OIL RECOVERY PROCESS

Vernon H. Schievelbein, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 191,586, Sep. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 92,900, Nov. 9, 1979, abandoned. This application Nov. 5, 1981, Ser. No. 318,549

Int. Cl.³ E21B *43/22*

U.S. Cl. 253—8.55 D **15 Claims**

1. A method for recovering petroleum from a subterranean, petroleum-containing formation, said formation being penetrated by an injection well and a spaced-apart producing well containing water having salinity greater than 20,000 parts per million total dissolved solids, comprising injecting into the formation via the injection well an aqueous saline surfactant fluid containing from 0.1 to 10.0 percent by weight of an alkoxylated and sulfonated surfactant having the following formula:

$$RO(R'O)_nR'SO_3^-X^+$$

wherein R is an alkylaryl group having from 6 to 20 carbon atoms in the alkyl chain, R' is ethylene or a mixture of ethylene and higher alkylene with relatively more ethylene than higher alkylene, n is an integer closest numerically to the average degree of alkoxylation at which the surfactant is effective for oil recovery at the formation water salinity, R' is ethylene, propylene, hydroxy propylene or butylene, S is sulfur, O is oxygen, and X is a monovalent cation,

wherein the alkoxylated and sulfonated surfactant is prepared by blending together at least two reaction products of different average degrees of alkoxylation, said reaction products each being comprised of molecular species of varying degrees of alkoxylation, the reaction products being blended in a predetermined ratio to produce a mixture of molecular species differing in the degree of alkoxylation and containing molecules having degrees of alkoxylation ranging from less than n−2 to n+10, wherein from 14 to 20 weight percent of the molecules have degrees of alkoxylation less than n−1, from 16 to 25 weight percent have degree of alkoxylation equal to n−1; from 16 to 25 weight percent of the molecules have degree of alkoxylation equal to n; from 12 to 17 percent have degree of alkoxylation equal to n+1; and from 15 to 25 percent have degree of alkoxylation greater than n+1,

said surfactant fluid displacing petroleum through the formation, and recovering the petroleum displaced by the surfactant solution from the formation via the producing well.

4,460,482

COMPOSITION AND METHOD FOR CORROSION INHIBITION

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 1, 1981, Ser. No. 298,445

Int. Cl.³ C23F *11/14*; E21B *41/02*

U.S. Cl. 252—8.55 E **27 Claims**

1. A composition which forms a corrosion-inhibiting film when applied to a metal surface, the composition comprising:

a primary or secondary amine selected from the groups consisting of monoamines containing eight to twenty-five carbon atoms, fatty amines and polyamines;

a diluent selected from the group consisting of essentially anhydrous liquid hydrocarbons and mixtures of essentially anhydrous hydrocarbons and alcohols; and

carbon dioxide present in the composition in an amount effective to improve the corrosion-inhibiting properties of the composition.

4,460,483

METHODS AND HYDROCARBON BASE TREATING FLUIDS FOR STABILIZING WATER SENSITIVE CLAY CONTAINING FORMATIONS

Jimmie D. Weaver, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

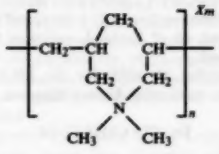
Filed Oct. 9, 1981, Ser. No. 310,166

Int. Cl.³ E21B *43/12*

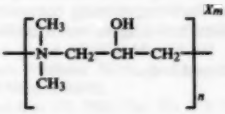
U.S. Cl. 252—8.55 R **11 Claims**

1. A method of forming a hydrocarbon base treating fluid for stabilizing clays in a water-sensitive subterranean clay-containing formation comprising the steps of:

forming an aqueous solution of an organic clay stabilizing polymer selected from the group consisting of a polydimethyldiallylammonium polymer wherein the repeating units have the structural formula



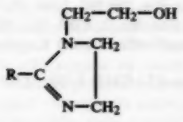
and wherein X is an anion, n is an integer equal to the number of repeating units in the polymer required to give a molecular weight in the range of from about 800 to about 3,000,000, and m is an integer equal to the number of anions required to maintain electronic neutrality and an organic polycationic polymer which is a condensation polymer of dimethylamine and ephichlorohydrin wherein the repeating units have the structural formula:



and wherein X is an anion, n is an integer equal to the number of repeating units in the polymer required to give a molecular weight in the range of from about 800 to about 3,000,000 and m is an integer equal to the number of anions required to maintain electronic neutrality;

said organic polycationic polymer being present in said aqueous solution in an amount in the range of from about 1% to about 60% by weight of said aqueous solution;

forming a mixture of an alkylhydroxyethylimidazoline-isopropyl alcohol emulsifier represented by the structural formula:



wherein R contains in the range of from about 16 to about 18 carbon atoms and hydrocarbon liquid;

combining said aqueous polymer solution with said emulsifier-hydrocarbon liquid mixture to form a hydrocarbon external, hydrocarbon liquid-aqueous polymer solution emulsion;

said aqueous polymer solution being present in said hydrocarbon external emulsion in an amount in the range from about 60% to about 95% by volume of said emulsion; and

dispersing said hydrocarbon external emulsion in a hydrocarbon carrier liquid in an amount in the range of from about 0.5 to about 24 gallons of emulsion per 1,000 gallons of said carrier liquid to form said treating fluid.

4,460,484

TERTIARY OIL RECOVERY SURFACTANTS

Carlton G. Force, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,347

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **6 Claims**

1. A method for recovering petroleum from a subterranean, petroleum-containing formation penetrated by at least one injection well and by at least one production well, comprising injecting an aqueous fluid containing an ultralow oil-water interfacial tension producing amount of at least one vegetable oil adduct surfactant having hydrophilic functional groups, said vegetable oil adduct being the Diels Alder addition product of a vegetable oil having polyunsaturated fatty acid ester groups in the triglyceride molecule.

4,460,485

POLYESTER FABRIC CONDITIONING AND WHITENING COMPOSITION

Anthony A. Rapisarda, Elmhurst, N.Y., and Joseph Romeo, Bergenfield, N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 15, 1983, Ser. No. 514,384

Int. Cl.³ D06M *13/20, 13/46;* C09K *11/06*

U.S. Cl. 252—8.75 **22 Claims**

1. A polyester fabric conditioning and brightening composition suitable for use in automatic washing machines comprising:

(a) a cationic fabric softening compound in an amount sufficient when added to wash or rinse water to significantly condition polyester fabric;

(b) a cotton- or nylon-substantative fluorescent whitening agent in an amount sufficient when added to wash or rinse water to significantly brighten polyester fabric; and

(c) a carboxylic acid containing at least 10 carbon atoms in an amount sufficient when added to wash or rinse water to significantly enhance the brightening of polyester fabric by the cotton- or nylon-substantive fluorescent whitening agent.

4,460,486

POLYALKYLENE OXIDE LUBRICANTS OF IMPROVED OXIDATIVE STABILITY

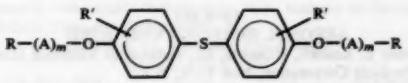
David D. Newkirk, Beaverton, Oreg., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 1, 1982, Ser. No. 438,398

Int. Cl.³ D06M *13/18;* C07C *1/20*

U.S. Cl. 252—8.9 **17 Claims**

11. A polyoxyalkylene compound having the formula:



wherein A is selected from the group consisting of oxyethylene, oxypropylene, oxybutylene, oxytetramethylene and heteric or block mixtures thereof, m is a whole number selected to given an overall molecular weight of 400 to 4000, R is selected from the group consisting of H, C_1 to C_{20} aliphatic groups and

wherein R' is H, halogen, an alkyl radical of 1 to 20 carbon atoms or a carboxyl groups and R'' is H or a C_1 to C_{20} aliphatic group and wherein R, R' and R'' may each be the same or different and m in each instance may be the same or different.

4,460,487

RINSE CYCLE FABRIC SOFTENER WITH BLEACH

Ronald A. Robinson, Garden Grove; Wendie T. Graf, Los Angeles, and George D. Evans, III, Tustin, all of Calif., assignors to Purex Corporation, Lakewood, Calif.

Filed Apr. 26, 1982, Ser. No. 371,981

Int. Cl.³ D06M *13/46;* D06L *3/02;* C11D *7/54*

U.S. Cl. 252—8.8 **11 Claims**

1. A stable, fabric bleaching and softening composition to be

used in rinse water in contact with fabrics, and prior to fabric drying, consisting essentially of

(a) hydrogen peroxide,

(b) cationic amine softener, and

(c) water,

wherein the weight ratio of softener to hydrogen peroxide is from about 1:20 to 2:3.

4,460,488

PLANT EXTRACTION RESIDUE AS A THICKENING OR OPACIFYING AGENT FOR A COSMETIC COMPOSITION

Jean-Francois Grollier, Paris; Josiane Allec, Pierrefitte; Chantal Fourcadier, Paris; Georges Rosenbaum, Asnieres, and Patrick Darmenton, Villejuif, all of France, assignors to Societe Anonyme dite: L'OREAL, Paris, France

Division of Ser. No. 221,636, Dec. 31, 1980, Pat. No. 4,358,286. This application Aug. 25, 1982, Ser. No. 411,539

Claims priority, application France, Jan. 4, 1980, 80 00093

Int. Cl.³ C11D *7/44*

U.S. Cl. 252—89.1 **13 Claims**

9. A shampoo composition comprising an effective amount of an anionic, nonionic, cationic or amphoteric detergent and between 2 and 95 percent by weight of said composition of a plant extraction residue, as a thickening or opacifying agent for said composition, said residue being the remainder of the extraction of essentially all the active principles present in said plant, said plant being selected from the group consisting of saponaria, ivy, eucalyptus, and nettle and being extracted with a solvent selected from the group consisting of ethanol, isopropanol and acetone, said plant extraction residue being in powder form having a granulometry less than 125 microns.

4,460,489

AEROSOL RUBBING COMPOUND

Stanley E. Kendall, Wilmette, Ill., assignor to American Home Products Corporation, New York, N.Y.

Filed Feb. 14, 1983, Ser. No. 466,259

Int. Cl.³ C11D *17/04*

U.S. Cl. 252—90 **6 Claims**

1. A pressurized rubbing compound in an aerosol container and suitable for dispensing therefrom comprising:

A. from 16.6 to 22.19 percent by weight of a soap moiety having from 12 to 17 percent soap solids based on the weight of the soap moiety and formed from a first member selected from the class consisting of sodium hydroxide, potassium hydroxide, triethanolamine and 2-amino-2-methyl-1,3-propanediol and a second member selected from the class consisting of oleic acid and linoleic acid in the ratio of 1 to 8.72;

B. from 41 to 46 percent by weight of amorphous silica having a maximum particle size of 55 microns;

C. from 16 to 20 percent by weight of an adjuvant moiety further comprising:

i. an amount of glycerine sufficient to retain water in the emulsion formed by said soap moiety;

ii. a lubricant in an amount sufficient to make the silica slide more easily during use; and

iii. a solvent in an amount sufficient to add fluidity to the composition,

D. from 18 to 22 percent by weight of deionized water to produce a viscosity of 60 to 80 Krebs units; and

E. sufficient propellent to provide aerosol discharge.

4,460,490

LAVATORY CLEANSING BLOCKS

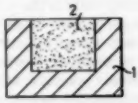
Eric D. Barford, Stanton; Daniel J. Jeffrey, and Paul A. Raynor, both of Thetford, all of England, assignors to Jeyes Group Limited, England

Filed Dec. 17, 1981, Ser. No. 331,822

Claims priority, application United Kingdom, Dec. 18, 1980, 8040679

Int. Cl.³ C11D *13/14*

U.S. Cl. 252—92 **3 Claims**



1. A lavatory cleansing block comprising a shaped body formed of a slow-dissolving cleaning composition containing at least one surface active agent and a tablet comprising a bleaching agent, the bleaching agent being embedded in or adhered to the shaped body.

4,460,491

PROCESS FOR PREPARING LOW SILICATE DETERGENT COMPOSITIONS

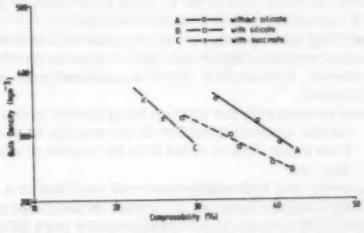
Seeng D. Liem, Rhoon, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 358,997, Mar. 17, 1982, abandoned. This application Jun. 2, 1983, Ser. No. 500,589

Claims priority, application United Kingdom, Mar. 23, 1981, 8108969

Int. Cl.³ C11D *3/04, 11/02*

U.S. Cl. 252—135 **5 Claims**



1. A process for the preparation of a crisp, free-flowing detergent powder which contains each in an effective amount for structuring the powder, a phosphate salt up to 6% by weight calculated as phosphorus, and up to 4% by weight sodium silicate, which process comprises the steps of

(a) forming an aqueous crutcher slurry comprising from about 2% to 25% anionic and from about 3% to 20% nonionic surfactant,

(b) conducting pressurized slurry to spray nozzles, and

(c) spray-drying the slurry to detergent powder, wherein the slurry comprises from 1 to 5% by weight, based on the spray-dried powder, of a water-soluble succinate salt.

4,460,492

LOW VISCOSITY LYOTROPIC CHOLESTERIC LIQUID CRYSTAL COMPOSITIONS

Mortimer M. Labes, and Heewon Lee, both of Philadelphia, Pa., assignors to Temple University, Philadelphia, Pa.

Filed Nov. 19, 1981, Ser. No. 322,937
Int. Cl.³ C09K 3/34
U.S. Cl. 252—299.6 11 Claims

1. A low viscosity cholesteric liquid crystal composition comprising a single phase, low viscosity solution of alkali cromoglycate in a water-based polar solvent, said cromoglycate being in a nematic liquid crystal state, and said solution further including at least one soluble chiral modifier selected from the group consisting of l-amino acids and the enantiomers or optical isomers thereof and di- and tripeptides (polyamino acids), said modifier being present in an amount sufficient to produce a short pitch cholesteric effect in the visible spectrum.

4,460,493

PROCESS TO CONTROL FOAMING IN NON-AQUEOUS SYSTEMS

Arnold W. Lomas, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Apr. 22, 1982, Ser. No. 370,713
Int. Cl.³ B01D 19/04
U.S. Cl. 252—321 13 Claims

1. A process to control foaming in non-aqueous systems, said process comprising adding to a non-aqueous system an effective amount of a composition consisting essentially of:

(A) from 0.005 to 72.99 percent by weight of a foam control agent for non-aqueous systems that is not readily soluble in the non-aqueous system, said agent selected from the group consisting of

(1) polydimethylsiloxane;

(2) poly(methyl-3,3,3-trifluoropropyl)siloxane;

(3) mixtures of (1) and (2);

(4) a major portion of (1), (2) or (3) above and a minor portion of a siloxane resin consisting essentially of SiO_2 units and $(CH_3)_3SiO_{\frac{1}{2}}$ units in which the ratio of SiO_2 units to $(CH_3)_3SiO_{\frac{1}{2}}$ units is in the range of 1.0:0.4 to 1.0:1.2;

(B) from 0.009 to 8.91 percent by weight of a dispersing agent selected from the group consisting of

(1) siloxane-organic copolymers consisting essentially of SiO_2 units, $(CH_3)_3SiO_{\frac{1}{2}}$ units and $D(CH_3)_2SiO_{\frac{1}{2}}$ units in which D is a polyoxyethylene polymer having a molecular weight of at least 500, or a polyoxyethylene-polyoxypropylene copolymer having a molecular weight of at least 500 and the polyoxypropylene portion constitutes up to 50 mole percent of the organic portion of the copolymer, said D being attached to a silicon atom via a silicon-carbon bond, the ratio of SiO_2 units to the total $(CH_3)_3SiO_{\frac{1}{2}}$ and $D(CH_3)_2SiO_{\frac{1}{2}}$ units being in the range of 1.0:0.4 to 1.0:1.2,

(2) copolymers which are reaction products derived from heating a mixture of a siloxane consisting essentially of SiO_2 units and $(CH_3)_3SiO_{\frac{1}{2}}$ units in which the ratio of SiO_2 units to $(CH_3)_3SiO_{\frac{1}{2}}$ units is in the range of 1.0:0.4 to 1.0:1.2, and a hydroxylated polyoxyethylene polymer having a molecular weight of at least 500 or a hydroxylated polyoxyethylene-polyoxypropylene copolymer having a molecular weight of at least 500 and the polyoxypropylene constitutes up to 500 mole percent of the organic portion of the copolymer.

(3) polydimethylsiloxane-organic copolymers in which the polydimethylsiloxane portion has a molecular weight of at least 1,400 and the organic portion consists essentially of a polyoxyethylene polymer having a molecular weight of at least 500, or a polyoxyethylene-polyoxypropylene copolymer having a molecular weight of at least 500 and the polyoxypropylene constitutes up to 50 mole percent of the organic portion of the copolymer, said organic portion being attached to a silicon atom via silicon-carbon bonds, and

(4) polydimethylsiloxane-organic copolymers which are reaction products produced by heating a mixture of hydroxylated polydimethylsiloxanes having a molecular weight of at least 1,400, and a hydroxylated polyoxyethylene polymer having a molecular weight of at least 500, or a hydroxylated polyoxyethylene-polyoxypropylene copolymer having a molecular weight of at least 500 and the polyoxypropylene constitutes up to 50 mole percent of the organic portion of the copolymer, and

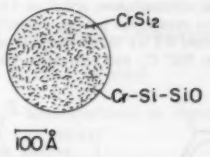
(C) from 0.018 to 18.09 percent of a non-ionic surfactant having an HLB number greater than 10.

4,460,494

RESISTOR

Katsuo Abe, Yokosuka; Tsuneyoshi Kawahito, Yokohama; Tsuneaki Kamei, Kanagawa; Masao Mitani, Yokohama; Kazuyuki Fujimoto, Tokyo, and Shigetoshi Hiratsuka, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 9, 1982, Ser. No. 440,419
Claims priority, application Japan, Nov. 13, 1981, 56-181150
Int. Cl.³ H01B 1/02
U.S. Cl. 252—512 3 Claims



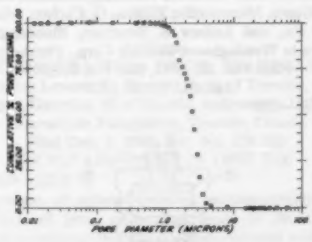
1. A resistor made of an alloy consisting essentially of 1 to 98 mol% of Cr, 1 to 98 mol% of Si and 1 to 98 mol% of SiO.

4,460,495

CATHODE FOR MOLTEN CARBONATE FUEL CELL

Charles D. Iacovangelo, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 10, 1982, Ser. No. 416,449
Int. Cl.³ H01B 1/06
U.S. Cl. 252—518 10 Claims



1. A process for producing a sintered body useful as a cathode in a molten carbonate fuel cell, said sintered body being composed of from about 10 weight % to about 90 weight % of $Li_xNi_{(1-x)}O$/balance $Li_yCu_{(1-y)}O$, where x and y each ranges from about 0.005 to about 0.25, which comprises providing a mixture of about 10 weight % to about 90 weight % of said $Li_xNi_{(1-x)}O$/balance said $Li_yCu_{(1-y)}O$, said mixture having an average particle size ranging from about 1.5μ to about 10μ, forming said mixture into a compact and firing said compact in air at a temperature ranging from about 600° C. to about 1000° C. producing said sintered body, said body having a porosity

ranging from about 25% by volume to about 75% by volume of the total volume of said sintered body.

4,460,496

PASTE FOR FORMING A TRANSPARENT, CONDUCTIVE FILM

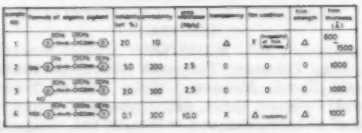
Mitsuru Kano, and Yoshimi Kamijo, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Dec. 10, 1982, Ser. No. 448,488

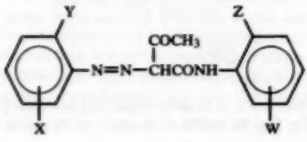
Claims priority, application Japan, Dec. 12, 1981, 56-199480

Int. Cl.³ A01B 1/06

U.S. Cl. 252—518 **6 Claims**



1. A paste for forming a transparent, conductive film comprising 2.69% $In(acac)_3$ and 0.31% $(CH_3)_3Sn(acac)_2$; a mixed solvent comprising butyl carbitol, butyl cellusolve, benzyl acetate and dimethyl phthalate in a ratio of 4:2:2:2 and ethers 15%; deacidified nitrocellulose; and from 1.0 to 5.0 wt % of an organic monoazo compound having a solubility in the organic solvent up to about 0.2 wt %, leaving substantially no residue on calcination at 500° C., and represented by the formula



wherein X is H, NO_2, or OCH_3 in the m- or p-position; y is OCH_3, NO_2, CH_3 in the o-position; Z is H, CH_3 or OCH_3 in the o-position; and W is H or CH_3 in the m- or p-position.

4,460,497

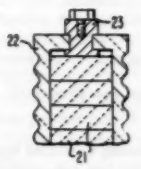
VOLTAGE STABLE NONLINEAR RESISTOR CONTAINING MINOR AMOUNTS OF ALUMINUM AND SELECTED ALKALI METAL ADDITIVES

Tapan K. Gupta, Monroeville; William G. Carlson, Murrysville, both of Pa., and Andrew S. Sweetana, Bloomington, Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 18, 1983, Ser. No. 468,009

Int. Cl.³ H01B 1/06

U.S. Cl. 252—518 **16 Claims**



1. A sintered high voltage resistor body which can exhibit long lasting nonlinear V-I characteristics, consisting essentially of at least about 90 mole % of ZnO and up to about 10 mole % of additional metal oxides effective to provide electrical nonlinearity within the resistor and including the combination of from about 0.002 mole % to about 0.02 mole % of aluminum oxide and a total amount of from about 0.003 mole % to about 0.2 mole % of at least one alkali metal oxide selected from the group consisting of sodium oxide, potassium oxide, rubidium oxide, and cesium oxide, as essential ingredients, where all the oxides are homogeneously distributed through the resistor body.

4,460,498

UNSATURATED ALICYCLIC ETHERS AND THEIR UTILIZATION AS PERFUMING AND FLAVORING INGREDIENTS

Wolfgang Giersch, and Günther Ohloff, both of Bernex, Switzerland, assignors to Firmenich SA, Geneva, Switzerland

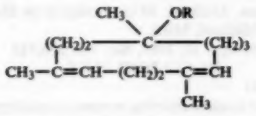
Division of Ser. No. 098,748, Nov. 30, 1979, Pat. No. 4,396,781. This application Sep. 30, 1982, Ser. No. 428,679

Claims priority, application Switzerland, Dec. 21, 1978, 12989/78

Int. Cl.³ A61K 7/46; C11B 9/00

U.S. Cl. 252—522 R **2 Claims**

1. A perfuming composition containing as active ingredients at least one of the unsaturated alicyclic compounds of the formula:



(I)

wherein symbol R represents a lower alkyl radical in addition to conventional perfumery ingredients.

4,460,499

METHOD FOR ENCAPSULATING RADIOACTIVE WASTE CONCENTRATES INTO NON-DEFORMABLE ASPHALT IN A MANNER READY FOR ULTIMATE DISPOSAL

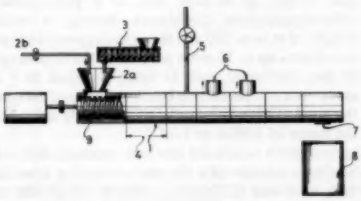
Hellmut Boden, Stuttgart, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 328,820

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048543

Int. Cl.³ G21F 9/16

U.S. Cl. 252—628 **14 Claims**



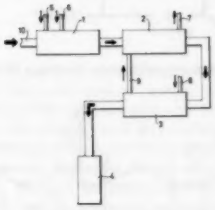
1. A method for the encapsulating of radioactive waste concentrates into non-deformable asphalt in a manner ready for ultimate disposal by the continous treatment of waste from industrial nuclear plants within an extruder with continuous evaporation of the water and admixing of the concentrate into the asphalt as a solidification substance for direct depositing within a container, characterized in that as solidification substance granulated asphalt and a hydrocarbon oil are introduced at the inlet end of the extruder in dosaged amount as components and are formed along a mixing path with addition of heat into a ductile asphalt into which the precipitation sludge is added downstream and homogeneously admixed with evaporation of the water contained therein.

4,460,500

METHOD FOR FINAL TREATMENT OF RADIOACTIVE ORGANIC MATERIAL

Ake Hultgren, Nyköping, Sweden, assignor to Studsvik Energiteknik AB, Nyköping, Sweden

Filed Mar. 16, 1982, Ser. No. 358,692
Claims priority, application Sweden, Mar. 20, 1981, 8101801
Int. Cl.³ G21F 9/16
U.S. Cl. 252—628 10 Claims



1. A method for final treatment of a spent radioactive organic ion exchanger mass, for transforming the material to stable form for terminal storage, characterized in that the material is mixed with an aqueous solution of a chemical agent which liberates radioactive substances bound in the material, as well as with an inorganic sorbent for the thus liberated radioactive substances, the mixture being subsequently dried and calcined while air or oxygen is supplied, so that the organic matter is combusted, the calcinated material subsequently being placed in a refractory storage vessel which is then heated together with its contents to a temperature at which the material sinters or fuses to a stable product.

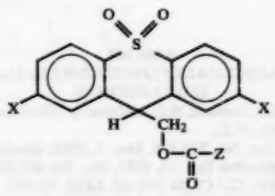
4,460,501

PROCESS FOR THE SYNTHESIS OF PEPTIDES UTILIZING THIOXANTHYLMETHYLOXYCARBONYL DIOXIDES

Louis A. Carpino, Amherst, Mass., and David Segev, D.N. Evtah, Israel, assignors to Research Corporation, Tuscon, Ariz.

Filed Aug. 30, 1983, Ser. No. 527,750
Int. Cl.³ C07G 7/00
U.S. Cl. 260—112 R 21 Claims

1. A composition of the formula



wherein X is lower alkyl, and Z is amino acid or peptide residue or a good leaving group.

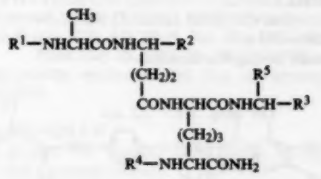
4,460,502

PEPTIDE, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Yoshihiko Kitaura, Sakurai; Osamu Nakaguchi, Toyonaka; Keiji Hemmi, Suita; Satoshi Yonishi, Kadoma; Hidekazu Takeno, Tenri; Satoshi Kada, Takatsuki, and Masashi Hashimoto, Takarazuka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 30, 1981, Ser. No. 316,653
Claims priority, application United Kingdom, Nov. 11, 1980, 8036175; Apr. 21, 1981, 8112290
Int. Cl.³ C07C 103/52
U.S. Cl. 260—112.5 R 8 Claims

1. A compound of the formula or its pharmaceutically acceptable salt:



wherein

R^1 is heptanoyl, phenylacetyl, 2-hydroxypropionyl or 2-acetoxypropionyl,

R^2 is carboxy or benzyloxycarbonyl,

R^3 is carboxy,

R^4 is hydrogen, t-butoxycarbonyl or benzyloxycarbonyl, and

R^5 is hydrogen or methyl.

4,460,503

TUBERCULINE ACTIVE PEPTIDES AND A PROCESS FOR PREPARING SAME BY CHEMICAL SYNTHESIS

Jaroslav Savrda, Palaiseau, and Hugo David, Sevres, both of France, assignors to Institut Pasteur, Paris, France

Filed Mar. 15, 1983, Ser. No. 475,639
Int. Cl.³ C07C 103/52
U.S. Cl. 260—112.5 R 4 Claims

1. A synthetic peptide of formula (II):

Asp-Gly-Gly-Ser-Glu-Ser-Glu-Gly-Lys-Asn-Gly-Ser-Glu-Met-Arg-Leu. (II)

4,460,504

SOLVENT EXTRACTION OF OIL BEARING SEEDS

Leon J. Rubin; Levente L. Diosady, both of Toronto, and Colin R. Phillips, Gormley, all of Canada, assignors to University of Toronto Innovations Foundation, Toronto, Canada

Filed Dec. 1, 1981, Ser. No. 326,363
Int. Cl.³ A23J 1/12, 1/14; C07G 7/00
U.S. Cl. 260—123.5 11 Claims

1. A process of solvent treating protein-containing solid material derived from oil-bearing seeds of the Cruciferae group so as to separate therefrom oil components and to obtain proteinaceous meal of reduced glucosinolate content, which comprises:

contacting the material with a first, polar liquid solvent comprising a lower alkanol having 1–6 carbon atoms containing dissolved ammonia at a concentration of at least 5%, to effect extraction of glucosinolate from the solid material;

subsequently contacting the material with a second, non-polar solvent comprising a lower alkane or a halogenated lower alkane, to effect extration of oil components from the solid material, said first and second solvents being substantially mutually immiscible;

recovering, as a solid material insoluble in both said solvents,

a proteinaceous meal of substantially reduced glucosinolate content,

and recovering oil components of the material from solution in the second non-polar solvent.

4,460,505

DYESTUFFS, PROCESSES FOR THEIR PREPARATION AND THEIR USE FOR DYEING MATERIALS CONTAINING HYDROXYL GROUPS OR NITROGEN

Karl H. Schündehütte, Leverkusen, and Hermann Henk, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

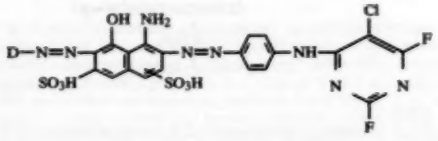
Filed Mar. 5, 1981, Ser. No. 240,638

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1980, 3010161

Int. Cl.³ C09B *31/02, 31/04, 31/14*

U.S. Cl. 260—153 **3 Claims**

1. Dyestuff having the formula



wherein D represents unsubstituted phenyl or phenyl substituted by one or two sulpho groups.

4,460,506

NITROVINYL AZIRIDINE DERIVATIVE

John Bradshaw, Hertfordshire, England, assignor to Glaxo Group Limited, London, England

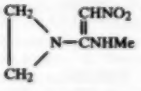
Division of Ser. No. 223,483, Jan. 8, 1981, abandoned. This application Jun. 4, 1982, Ser. No. 385,076

Claims priority, application United Kingdom, Jan. 8, 1980, 8000580; Jan. 8, 1980, 8000581

Int. Cl.³ C07D *203/12*

U.S. Cl. 260—239 E **1 Claim**

1. The ethyleneimino derivative of formula (III)



(III)

4,460,507

PROCESS FOR THE PREPARATION OF THIENAMYCIN

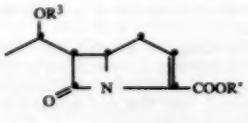
David H. Shih, Manalapan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 195,993, Oct. 10, 1980, Pat. No. 4,341,705. This application Apr. 29, 1982, Ser. No. 373,089

Int. Cl.³ C07D *487/04*

U.S. Cl. 260—245.2 T **3 Claims**

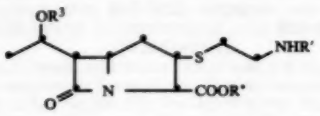
1. A process for preparing thienamycin comprising the steps of treating:



A

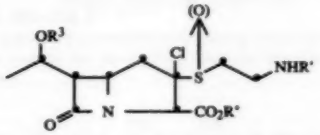
with

in the presence of a base in an aprotic solvent



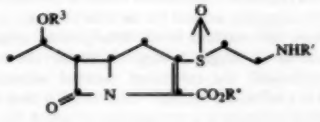
B

followed by treatment with iodo benzene dichloride to form:



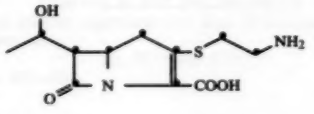
C

followed by dehydrochlorination with DBU or DBN to yield:



D

followed by non catalytic reduction using 2-phenoxy-1,3,2-benzodioxaphosphole/iodine,2-chloro-1,3,2-dioxphosphole, triphenyl phosphite, dichloroborane, iron pentacarbonyl, tin (II) chloride or diphosphorus tetraiodide and deblocking to yield thienamycin:



E

wherein: R^3, R* and R' are readily removable protecting groups selected from triorganosilyl, tetrahydropyranyl, p-No_2-benzyloxy carbonyl, o-No_2-benzyloxycarbonyl, o-nitrobenzyl p-nitrobenyl and benzyloxycarbonyl.

4,460,508

5-DIAZACYCLOALKYLIMIDAZO[1,2-c][1,3]BENZODIAZEPINES

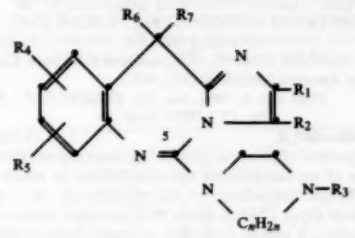
Isidoros Vlattas, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 328,274, Dec. 7, 1981, abandoned. This application Sep. 13, 1982, Ser. No. 417,747

Int. Cl.³ C07D *243/04;* **A61K** *31/495*

U.S. Cl. 260—245.6 **4 Claims**

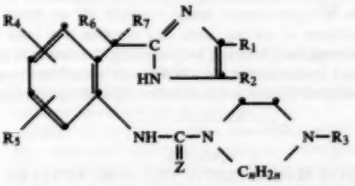
1. The process for the preparation of a compound of the formula



(I)

wherein each of R_1 and R_2 are hydrogen, lower alkyl, cyano, carboxy, lower alkoxycarbonyl or carbamoyl; C_nH_{2n} is lower alkylene separating both nitrogen atoms by 2 or 3 carbon atoms and n represents the integer 2 to 4: R_3 is hydrogen, lower alkyl, lower alkoxycarbonyl or hydroxy-lower alkyl of 2 to 4 carbon atoms; R_4 represents hydrogen, lower alkyl, lower alkoxy, lower alkylthio, halogen or trifluoromethyl; R_5 represents hydrogen; and R_6 and R_7 represent hydrogen or lower alkyl; or a pharmaceutically acceptable salt thereof, comprising:

(a) cyclizing a compound of the formula



(VI)

wherein Z is oxygen, sulfur, or NH, and the other symbols have the meaning as defined above under dehydrating, dehydrosulfurating or deamination conditions; and if desired

(b) converting any resulting compound into another compound of formula I.

4,460,509

CHEMICAL SYNTHESIS

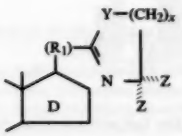
Erwin H. Mosbach; Narayan K. N. Ayengar, and Charles K. McSherry, all of New York, N.Y., assignors to Beth Israel Medical Center, New York, N.Y.

Filed Aug. 19, 1981, Ser. No. 294,338

Int. Cl.³ C07J 9/00

U.S. Cl. 260—239.5 **9 Claims**

1. A steroid compound of the pregnane, cholestane, cholane or androstane series having a D-ring side chain structure of the formula:



wherein R_1 is

or —(C_nH_{2n})— wherein n is an integer of from 0 to 8;

Y is S,O, or N;

x is an integer from 1 to 3; and

each Z is the same or different and may be H, lower alkyl, aryl, cycloalkyl, aralkyl, or halo substituted alkyl, acyl, cycloalkyl or aralkyl; and the non-toxic pharmaceutically acceptable salts thereof.

4,460,510

PROCESS FOR ALKOXYCARBONYLATING ALPHA-OLEFINS HAVING A SINGLE BRANCH

Peter Hofmann, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

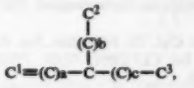
Filed May 10, 1982, Ser. No. 376,749

Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121573

Int. Cl.³ C11C 3/02

U.S. Cl. 260—410.9 R **11 Claims**

1. A process for reacting alpha-olefins having a single branch of the general formula:



where a, b, and c are $7 \leqq$, $a+b+c+4 \leqq 40$, and where $a \neq b$, $a \neq c$, $a < b$, with carbon monoxide and a compound having a hydroxyl function selected from the group consisting of water and alkanols in the presence of a catalytic system consisting of a cobalt compound and a promoter selected from the group consisting of pyridine, a non-ortho-substituted alkylpyridine or a mixture thereof at a pressure of at least 50 bars and at a temperature between 175° and 230° C. into an isomer mixture selected from the group consisting of carboxylic acids and carboxylic acid alkylesters formed by functionalizing carbon atoms C^2 or C^3 of the general formula and carrying out the reaction with a ratio of promoter to cobalt based on atoms of nitrogen to atoms of cobalt of 2:1 to 15:1 and at an olefin conversion exceeding 50%.

4,460,511

PRODUCTION OF ANTIMONY ORGANOPHOSPHORODITHIOATES

Ernest B. Boston, Phillips, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 10, 1982, Ser. No. 416,774

Int. Cl.³ C07F 9/90

U.S. Cl. 260—446 **6 Claims**

1. A composition comprising antimony tris(di-n-propylphosphodithioate) and a stabilizing amount of at least one alcohol selected from the group consisting of isopropyl alcohol, n-butyl alcohol, ethyl alcohol, t-butyl alcohol, n-amyl alcohol and cyclohexyl alcohol, and n-heptyl alcohol.

3. A process for stabilizing compositions containing one or more antimony organophosphorodithioates against haze formations and phase separation comprising adding thereto one or more alcohols.

4,460,512
ω-FLUOROSULFATO-PERFLUOROCARBOXYLIC ACID DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Hans Millauer, Eschborn, and Werner Schwertfeger, Butzbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 300,945, Sep. 10, 1981, abandoned. This application Apr. 6, 1983, Ser. No. 482,570
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034538
Int. Cl.³ C07C 141/00
U.S. Cl. 260—458 F 10 Claims

1. An ω-fluorosulfato-perfluorocarboxylic acid derivative of the formula

$$FSO_2-O-(CF_2)_m-(CF_2-O-\underset{\displaystyle CF_3}{\underset{|}{CF}})_n-COA$$

in which A is halogen or OR wherein R is alkyl, m is a number from 1 to 10, and n is a number from 0 to 10.

4,460,513
METHOD FOR PREPARING ORGANIC HYPONITRITES

G. David Mendenhall, Hancock, Mich., assignor to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Oct. 25, 1982, Ser. No. 436,634
Int. Cl.³ C07C 77/00, 77/02
U.S. Cl. 260—466 14 Claims

1. A method for preparing a tertiary organic hyponitrite comprising reacting an alkali metal, alkaline earth, ammonium or substituted ammonium salt of hyponitrite with a tertiary organic halide having the general formula

$$R_1-\underset{\displaystyle R_3}{\overset{\displaystyle R_2}{\underset{|}{\overset{|}{C}}}}-X$$

wherein R_1, R_2 and R_3 are aliphatic, substituted aliphatic or substituted aromatic groups and the bond between C and each R_1, R_2, and R_3 is connected to a saturated carbon and X is a halide, in the presence of a catalytic amount of a weak Friedel-Crafts catalyst which does not readily react with water and in a solution of substantially neutral solvent capable of dissolving said catalyst without substantially inhibiting its catalytic activity to produce the corresponding organic tertiary hyponitrite, while maintaining the reaction medium at a temperature below the decomposition temperature of said tertiary organic hyponitrite.

4,460,514
METHOD FOR THE PREPARATION OF POLY (CARBONYL FLUORIDE) OLIGOMERS

Keith B. Baucom, Gainesville, and Burrell N. Hamon, Starke, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 274,697, Jun. 17, 1981, Pat. No. 4,374,715. This application Sep. 16, 1982, Ser. No. 418,951
Int. Cl.³ C07C 51/58
U.S. Cl. 260—544 F 2 Claims

1. In a method for preparing poly (carbonyl fluoride) oligomers by initiating a reaction between a reaction mixture of F-3-methylbutene-1 and oxygen within an evacuated reaction vessel in the absence of ultraviolet radiation, the improvement which comprises adding minor amounts of trifluoromethylhypofluorite to said mixture as a reaction initiator.

4,460,515
HYDROCARBON SOLVENT SOLUTIONS OF COMPLEXES OF SEC-BUTYLLITHIUM AND ETHYLLITHIUM

Robert C. Morrison, Gastonia, N.C., assignor to Lithium Corporation of America, Bessemer City, N.C.

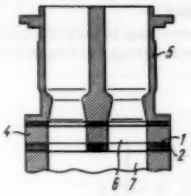
Filed Jul. 6, 1982, Ser. No. 395,271
Int. Cl.³ C07F 3/02
U.S. Cl. 260—665 R 28 Claims

1. In a method of preparing liquid hydrocarbon solutions of complexes of sec-butyllithium and ethyllithium in which the ratio of the sec-butyllithium to the ethyllithium, on a mole basis, is from about 17:83 to about 95:5, the steps which comprise providing a stirred dispersion of finely divided lithium metal containing a small proportion of sodium metal in a liquid with which the lithium metal is essentially unreactive, discontinuing the stirring and allowing the lithium metal to rise to the top of the mixture, separating out the unreactive liquid and replacing it with a liquid hydrocarbon solvent, gradually adding to said lithium metal dispersion, under conditions of vigorous agitation and in an inert gas atmosphere, a relatively homogeneous mixture of (a) sec-butyl chloride or bromide and (b) ethyl chloride or ethyl bromide in predetermined relative proportions to provide the aforesaid solutions containing the complexes in their above-stated molar ratios of the sec-butyllithium and ethyllithium, and continuing the reaction at a temperature in the approximate range of about 20° to about 35°, under conditions of stirring, until said reaction is at least substantially completed, filtering and washing the reaction muds with a liquid hydrocarbon solvent for said complexes to produce a final clear hydrocarbon solution of said complexes.

4,460,516
DEVICE FOR MAGNETIZING THE FUEL MIXTURE OF AN INTERNAL COMBUSTION ENGINE

Boris A. Kapitanov, Kutuzovsky prospekt, 23, kv. 89; Valery G. Blatov, ulitsa Oxkaya, 24/1, korpus 2, kv. 55; Viktor P. Dmitriev, Kutuzovsky prospekt, 43, kv. 189; Gumer K. Enikeev, ulitsa Novatorov, 14, korpus 2, kv. 193; Mikhail A. Ermilov, Lazovsky pereulok, 4, kv. 95; Anatoly I. Soldatov, Kutuzovsky prospekt, 43, kv. 124, and Vladimir N. Cheretaev, ulitsa Astradamskaya, 15-a, kv. 29, all of Moscow, U.S.S.R.

PCT No. PCT/SU80/00184, 371 Date Jul. 12, 1982, 102(e) Date Jul. 12, 1982, PCT Pub. No. WO82/01918, PCT Pub. Date Jun. 10, 1982
PCT Filed Nov. 28, 1980, Ser. No. 403,511
Int. Cl.³ F02M 27/04
U.S. Cl. 261—1 5 Claims



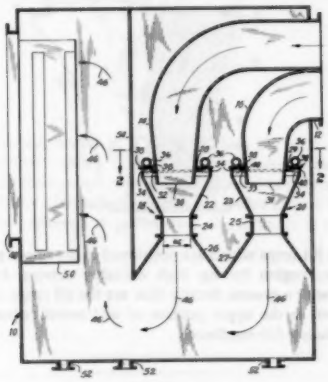
1. A device for magnetizing the fuel mixture of an internal combustion engine, comprising permanent magnetic field means fitted in the engine fuel system, said magnetic field means being in the form of an annular permanent magnet installed in a nonmagnetic body and positioned in an engine air-fuel mixture duct, said magnet having an inner diameter substantially equal to the inner diameter of the air-fuel mixture duct, the poles of the magnet being oriented in such a way that the direction of the magnetic field established thereby is parallel to the direction of the air-fuel mixture flow in the duct.

4,460,517

COMPACT VENTURI-TYPE SCRUBBER

Ralph R. Calaceto, 248 Palmer Ct., Ridgewood, N.J. 07450

Filed Jul. 8, 1982, Ser. No. 396,517
Int. Cl.³ B01F 3/04
U.S. Cl. 261—23 R 13 Claims



1. A scrubber for treating a flow stream of gases for removal of particulate matter therefrom, comprising:

a housing having an inlet opening and discharge opening for passage therethrough of said gas flow;

a plurality of venturi scrubber assemblies within said housing, each said assembly including a convergent flow section, a divergent flow section, a throat positioned between said convergent and divergent sections, said throat being rectilinear having a width w and extended length l;

first means for injecting liquid onto the walls of said convergent section proximate the inlet of said convergent section;

channel means internally of said housing and separately extending from said housing inlet opening to the convergent section of each of said plurality of venturi assemblies, each venturi assembly receving a segregated portion of the total gas flow entering said housing, said channel means extending in the gas flow direction beyond the inlet of said convergent section, the discharge area of said channel means being less than the inlet area of said convergent section, said liquid being injected between said channel means and the walls of said convergent sections, said flow stream of gases meeting said liquid in said throat, said portions passing through said convergent sections, throats and divergent sections, and discharging within said housing, said gas exiting said housing through said housing discharge opening.

4,460,518

DEVICE FOR CONTROLLING THE OPERATION OF A CARBURETOR

Mitsuyoshi Teramura; Masatami Takimoto, both of Toyota; Norihiko Nakamura, Mishima; Takaaki Itoh, Mishima; Takashi Katou, Mishima; Shunsuke Mizutani, Nukata, and Yozo Sakakibara, Kariya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Obu, both of, Japan

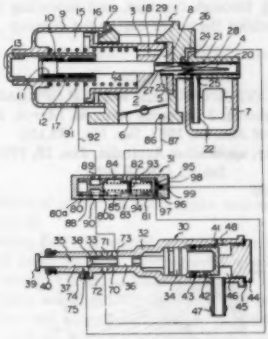
Filed Sep. 2, 1982, Ser. No. 414,314
Claims priority, application Japan, Dec. 22, 1981, 56-206058
Int. Cl.³ F02M 9/06
U.S. Cl. 261—39 A 11 Claims

1. A device for controlling the operation of a carburetor for an internal combustion engine having an intake passage, a throttle valve arranged in the intake passage, a float chamber, a fuel passage connecting the float chamber to the intake passage, and an air bleed passage connected to the fuel passage, said device comprising:

a housing having a bore therein;

a push rod slidably inserted into said bore and operatively connected to the throttle valve, said push rod defining an atmospheric pressure chamber which is located within said bore and is open to the atmosphere;

a port formed in said housing for connecting said atmospheric presure chamber to the air bleed passage, said push rod cooperating with said port for controlling the area of opening of said port;



a temperature reactive apparatus connected to said push rod and actuating said push rod in response to engine temperature for simultaneously controlling the degree of opening of the throttle valve and the amount of air fed into the fuel passage from the air bleed passage; and

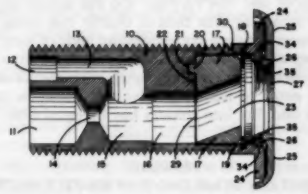
a vacuum operated valve controlling the fluid connection between the air bleed passage and the atmosphere for increasing the amount of air fed into the fuel passage from the air bleed passage following a time delay period after the engine starts.

4,460,519

HYDROTHERAPY JET UNIT

Wilbur P. Leggett, 2189 Geronimo Way, Las Vegas, Nev. 89109

Continuation of Ser. No. 249,892, Apr. 3, 1981, Pat. No. 4,379,097. This application Jan. 17, 1983, Ser. No. 458,438
Int. Cl.³ B01F 3/04
U.S. Cl. 261—76 3 Claims



1. A hydrotherapy jet unit comprising a housing having a water inlet and an air inlet at a rear portion thereof, said water and air inlets being substantially coplanar, and a mixed fluid outlet at a forward portion thereof, said jet unit also comprising a mixing chamber, a longitudinal water passageway extending forwardly from the water inlet to the mixing chamber, and an air passageway extending from the air inlet to the mixing chamber, said air passageway having a rearward portion parallel to the water inlet and an angled foreward portion extending to the mixing chamber said housing having an elongate cylindrical rear body portion extending to the rearward

extremity of the housing having a substantially uniform diameter and having exterior threads along substantially the entire length of the housing.

2. A hydrotherapy jet unit comprising a cylindrical housing having a threaded exterior surface portion, air and water inlets at a rear portion thereof and a mixed fluid outlet formed by a wall of a cylindrical bore in the housing at a forward portion thereof, a circular mounting flange extending radially from the forward portion of the housing, a detachable decorative cover cap having a central circular orifice adapted to fit over the mounting flange, said orifice being formed at least in part by inwardly converging walls adapted to provide final definition to fluid flowing through the unit, and mounting means for frictionally attaching the cover cap to the housing.

4,460,520

EVAPORATIVE COOLER WATER SPREADER

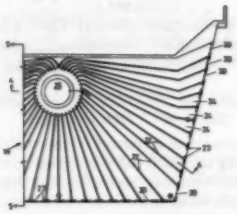
Robert W. Wrightson, 3 Rothesay Ave., St. Marys, Australia

Filed Jun. 14, 1982, Ser. No. 388,110

Claims priority, application Australia, Jun. 19, 1981, PE9363

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—106 **8 Claims**



1. A spreader for the spreading of water in an evaporative cooler of the type having absorbent pads at least partly surrounding a motor driven fan, comprising:

a spreader plate having a water receiving area, a plurality of ribs upstanding from the plate and radiating outwardly from the water receiving area and forming between them a plurality of water flow channels, which, in a cooler, terminate above said absorbent pads, the floor of each said water flow channel sloping downwardly from its water receiving area end,

a cover over the water receiving area of the spreader plate, having a deflector surface above the water receiving area and having such shape as to deflect water flow over the water receiving area in a constant thickness film, the lengths of said ribs varying, and the spaces between the water receiving area ends of shorter ribs being less than the spaces between corresponding ends of longer ribs by such an amount that additional resistance to water flow along each of the longer channels is compensated for by a wider entry to that respective said channels such as to divide said film into streams having equal flow rates.

4,460,521

CROSSFLOW COOLING TOWER FILL SECTION

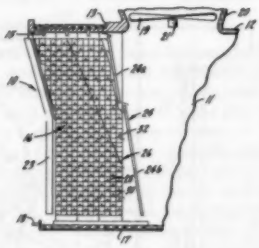
David W. Stackhouse, Sebastopol, Calif., assignor to Ecodyne Corporation, Santa Rosa, Calif.

Filed Apr. 19, 1982, Ser. No. 369,485

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—111 **8 Claims**

1. In a crossflow liquid cooling tower in which air flows generally horizontally through a fill section positioned within the tower in cooling relationship with a liquid descending generally vertically through said fill section, said tower having at least one side wall having an air inlet for directing air into an inlet region of said fill section over substantially the entire height thereof and an air outlet for removing air from an outlet region of said fill section; an improved splash-type fill assembly positioned within said fill section, comprising: a plurality of spaced apart vertically suspended fill hangers supported within said fill section; and a plurality of splash-type fill strips positioned within said fill section and supported on said fill hangers, said fill strips which are positioned in the upper portion of said inlet region having high enthalpy driving forces are packed with a greater density than are the fill strips which are positioned in the upper portion of said outlet region having low enthalpy driving forces.



4,460,522

METHOD OF PRODUCING LOW DENSITY OXIDE FUEL PELLET

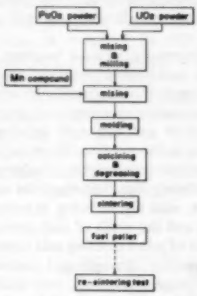
Manabu Kinugasa, Katsuta, and Hiromitsu Kaneko, Ibaraki, both of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Mar. 11, 1983, Ser. No. 474,351

Claims priority, application Japan, Sep. 14, 1982, 57-160045

Int. Cl.³ G21C *21/00, 3/62*

U.S. Cl. 264—0.5 **5 Claims**



1. A method of producing an oxide fuel pellet having a low density comprising the steps of adding a manganese compound to an oxide fuel powder selected from a group consisting of uranium dioxide powder and a mixed powder of uranium dioxide and plutonium dioxide, in an amount of 0.01 to 5.0% by weight based on the weight of the oxide fuel powder, molding the resulting mixture into a pellet form, and sintering the pellet-formed mixture at a temperature of 1,200° to 1,700° C.

4,460,523

METHOD OF MAKING COSMETIC CONTACT LENSES

Charles W. Neefe, 2701 Rebecca St., Big Spring, Tex. 79720

Continuation-in-part of Ser. No. 462,413, Jan. 31, 1983. This application Mar. 14, 1983, Ser. No. 463,541

Int. Cl.³ B29D *11/00*

U.S. Cl. 264—1.9 **5 Claims**

1. A method of making a cosmetic contact lens blank by the

steps of forming an open ended cylinder having an inside diameter equal to the size of the desired lens pupil and an outside diameter equal to the size of the desired lens iris, the cylinder being made from a selected transparent monomer, a transparent colorant and reflecting particles, the mixture is

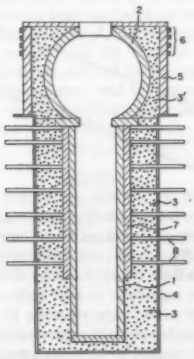
allowed to polymerize in a mold to form the cylinder, the cylinder is filled with a mixture of the transparent monomer and the said transparent colorant and allowed to polymerize, a larger cylinder of transparent monomer is cast around the first cylinder and allowed to polymerize, the cylinder is cut into discs.

4,460,524

METHOD FOR HEATING A RISER OF MOLTEN REFRACTORY MATERIAL

Shiro Takahashi, Yokohama; Yoshio Nakagawa, Kasai, and Yutaka Hosoda, Takasago, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 428,689
Claims priority, application Japan, Dec. 8, 1981, 56-196264
Int. Cl.³ B22D *11/16*
U.S. Cl. 264—26 **6 Claims**



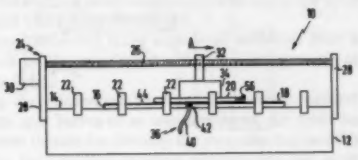
1. A method for heating a riser of a molten refractory material after a heat molten refractory material is poured into a mold, which comprises directly subjecting a melt of the molten refractory material at a upper portion of the mold to induction heating by conducting an electric current by application of an AC voltage at a frequency of from about 50 to 1,000 KHz to an induction coil with at least two windings around the riser portion containing said melt, without induction heating the upper portion of the mold.

4,460,525

METHOD FOR PREPARING THIN LAYERS

Wilhelm Ansorge, Gaiberg über Heidelberg, Fed. Rep. of Germany, assignor to Europaisches Laboratorium Fur Mokekularbiologie (EMBL), Heidelberg, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 275,894
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024288
Int. Cl.³ B29C *1/02*
U.S. Cl. 264—39 **31 Claims**



1. A method of preparing a thin layer, said method comprising the steps of:

(a) providing first and second mold elements having first and second mold surfaces, respectively, said first mold element having a straight leading edge;

(b) disposing said mold elements in a first position wherein said first and second surfaces are parallel and face each other, and are spaced a selected small distance from each other, with said surfaces overlapping each other with said first element's leading edge overlying said second mold surface;

(c) introducing a liquid layer-forming material to the space defined between said first and second mold surfaces adjacent said leading edge;

(d) shifting said mold elements relative to each other in a forward direction which is generally perpendicular to the direction of said leading edge from said first position to a second position wherein said mold surfaces are opposed, maintaining said surfaces in parallel relation during the shifting of said element; and

(e) introducing said liquid to the space defined between said surfaces at a point adjacent said leading edge simultaneously with the shifting of said elements.

4,460,526

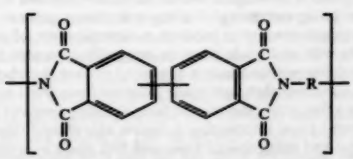
PROCESS FOR PRODUCING AROMATIC POLYIMIDE HOLLOW FILAMENTS

Hiroshi Makino; Yoshihiro Kusuki; Takashi Harada, and Hiroshi Shimazaki, all of Ichihara, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Apr. 2, 1982, Ser. No. 364,638
Claims priority, application Japan, Apr. 3, 1981, 56-49402
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—41 **20 Claims**

1. A process for producing aromatic polyimide hollow filaments comprising the steps of:

(1) preparing a spinning dope solution of a polymer material consisting of at least one aromatic polyimide having at least 90 molar % of a recurring unit of the formula (I):

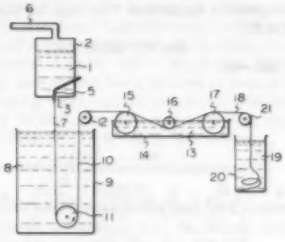


(I)

wherein R represents a divalent aromatic radical, in a

solvent comprising, as a main component thereof, at least one phenolic compound;

(2) extruding said spinning dope solution through at least one spinning hole to form at least one hollow filamentary stream thereof; and



(3) introducing said hollow filamentary streams of said spinning dope solution into a coagulating liquid which is compatible with said solvent, but not compatible with said polymer material, and which exhibits a coefficient of coagulating rate of 1.5 microns/second or more for said spinning dope solution, to provide coagulated hollow filaments of said polymer material.

4,460,527

CERAMIC ROTOR AND MANUFACTURING PROCESS THEREFOR

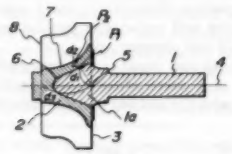
Kiminari Kato, Konan, Japan, assignor to NGK Insulators, Ltd., Japan

Filed May 5, 1981, Ser. No. 260,749

Claims priority, application Japan, Nov. 20, 1980, 55-162706

Int. Cl.³ C04B *39/12*

U.S. Cl. 264—56 **10 Claims**



1. A process of producing a ceramic rotor, comprising steps of preparing at least one mixture consisting of 100 parts of ceramic powder and 0.1 to 20 parts of sintering agents which are active during sintering at atmospheric pressure, forming a body of blade portions of integral structure from said mixture by one of injection molding and casting, forming a body of a blade-holding portion by casting said mixture in a metal mold and applying isotropic compression to the thus cast body so as to cause said blade-holding portion to have a larger density after sintering than that of said blade portions after sintering, applying ceramic paste to those surfaces of said body of blade portions and said body of blade-holding portion which are to be cemented, coupling said bodies at said pasted surfaces, and sintering the thus coupled bodies in an atmosphere selected from the group consisting of nitrogen and inert gases at atmospheric pressure so as to produce a ceramic rotor of unitary structure with said blade portions integrally cemented to said blade-holding portion along a cemented surface therebetween in such a manner that, said blade portions have front surfaces defining a first plane and rear surfaces defining a second plane, said second plane intersecting a central axis of said rotor at a first point and being spaced from said first plane by a distance d_3 along said central axis, and said blade portions have inter-blade center lines defining a curved surface surrounding said central axis, said cemented surface is located between said curved surface and said central axis so that a distance d_1 from an arbitrary point on said cemented surface to said first point along a straight line therebetween is smaller than said distance d_3 but not smaller than a distance d_2 from said arbitrary point on said cemented surface to said curved surface taken along said straight line, namely, $d_1 < d_3$ and $d_1 \geqq d_2$.

4,460,528

REFRACTORY

Daniel R. Petrak, Lynchburg, Va.; Howard M. Winkelbauer, West Mifflin, Pa.; Thomas R. Kleeb, Pittsburgh, and Ke-Chia Wang, Upper St. Clair, both of Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 149,610, May 14, 1980, abandoned. This application May 12, 1981, Ser. No. 263,390

Int. Cl.³ C04B *35/02, 35/44*

U.S. Cl. 264—65 **4 Claims**

1. A method for producing nitride bonded refratory shapes, in situ, comprising mixing, a composition consisting essentially of, by weight, from about 1 to 25% aluminum, about 1 to 15% substantially pure silica, about 1 to 5% crude clay and the balance a refractory brickmaking size graded refractory aggregate selected from the group consisting of calcined fireclay, fused mullite, synthetic alumina and magnesium aluminate spinel, pressing said mixes into refractory shapes, and burning the shapes at an elevated temperature in a nitriding atmosphere for a time sufficient to form the nitride bond.

4,460,529

PROCESS FOR MANUFACTURING A CERAMIC HOLLOW BODY

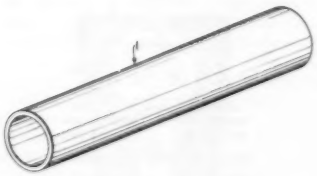
Werner Schultze, Bonn, and Knut Weber, Jr., Wiehl, both of Fed. Rep. of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn and Langlet Weber KG, Gummersbach, both of, Fed. Rep. of Germany

Filed Jan. 15, 1981, Ser. No. 225,191

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1980, 3001371

Int. Cl.³ D04N *1/20*

U.S. Cl. 264—81 **14 Claims**



1. A process for manufacturing a ceramic or ceramic oxide hollow body of a predetermined shape, comprising:

providing a hollow mold core constructed from a material having a high thermal conductivity and thermal expansion coefficient as compared to said hollow body and having an outer wall surface non-adhering to said hollow body, said mold core having said predetermined shape and sufficient internal cooling to prevent damage to said core upon exposure to plasma temperatures;

flame spraying non-aggregated, atomized particles selected from the group consisting of ceramic and ceramic oxide particles free of binding agents, through a hot plasma jet, on said mold core outer surface, to deposit a uniform coat of said particles on said outer surface while maintaining a predetermined temperature gradient across the wall of said mold core at the point of spraying;

continuing internal cooling of said mold core and subjecting said coat of said particles to additional cooling action by a

compressed gas jet to cause said particles to fuse into a hollow body layer; and

separating said hollow body layer from said mold core.

4,460,530

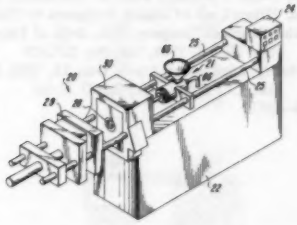
METHOD FOR PRODUCING POROUS SHAPED PRODUCTS

Timothy A. Hanson, and David W. Smith, both of Fort Collins, Colo., assignors to Teledyne Industries, Inc.

Continuation of Ser. No. 55,637, Jul. 9, 1979, abandoned. This application Nov. 23, 1982, Ser. No. 443,943

Int. Cl.³ B27I *5/00*

U.S. Cl. 264—121 **14 Claims**



1. A method of producing a porous plastic molded product of predictable porosity throughout, comprising the steps of forming a fluidized stream of ultra-high-molecular-weight moldable-plastic powder solid particles and air; injecting said fluidized powder airstream into a cavity of a closed mold, composed of mating portions which define said cavity when mutually closed together and which confines said powder within its interior, to fill said mold cavity with said powder while said airstream leaves said cavity through means for escape of said air while precluding flow of said particles from said cavity; maintaining said mold at a temperature and for a time sufficient to fuse or sinter said powder particles together, in situ within said mold, without needing the imposition upon said powder of any molding pressure beyond that developed by said injecting in order to fuse or sinter said particles, without opening said portions apart and without melting said particles, thereby to form a porous plastic molded product of uniform predictable porosity and the exterior of which has a determined size and shape defined by and conformed to the shape and size of said interior; and subsequently discharging said porous plastic molded product from said mold without first having to have cooled said mold.

4,460,531

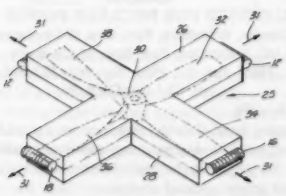
COMPOSITE FIBER REINFORCED PROPELLER

Charles E. Harris, and Donnie T. Toombs, Jr., both of Wichita, Kans., assignors to The Boeing Company, Seattle, Wash.

Filed May 10, 1982, Ser. No. 376,310

Int. Cl.³ B29C *6/02*; B29D *3/02*; B29F *1/10*

U.S. Cl. 264—138 **5 Claims**



1. A method of making a lightweight fiber reinforced propeller having a hub and at least two blades integrally attached to the hub and extending outwardly therefrom, the steps including:

winding a reinforcing fiber around a first blade tip mandrel, the first mandrel positioned beyond the end of the tip of the first blade to be reinforced; winding the fiber around a portion of a circumferences of an annular shaped central mandrel, the central mandrel positioned where the propeller hub is to be formed;

winding the fiber around a second blade tip mandrel, the second mandrel positioned beyond the end of the tip of the second blade to be reinforced;

repeating the above three steps until sufficient fiber is received on the mandrels for the required strength of the propeller;

placing the reinforcing fiber and the central mandrel between split halves of an injection mold, the mold having cavities therein for forming the propeller hub and blades;

pouring the injection molding material into the mold for forming the propeller therein and curing the injection molding material and removing the fiber reinforced propeller therefrom during said winding steps said first and second mandrels being substantially parallel to said central mandrel and during said placing step rotating said first and second mandrels so as to be substantially perpendicular to said central mandrel.

4,460,532

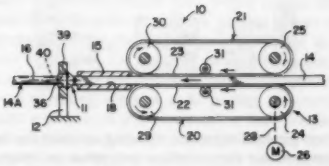
METHOD FOR MAKING MOLDINGS USING A FIXED SHAPING DIE

Richard R. Cornell, 334 W. State St., Newcomerstown, Ohio 43832

Filed May 17, 1982, Ser. No. 378,596

Int. Cl.³ B28B *7/14*; B27M *3/00*

U.S. Cl. 264—163 **3 Claims**



1. A method for shaping a desired, finished cross-section of a workpiece having a layered structure comprising the steps of: selecting a workpiece of sufficient cross-sectional area to provide the finished cross-section, orienting the workpiece so that the layered structure thereof is oriented in a predetermined disposition, driving the workpiece through an aligning guide and into a die having a mouth, providing a plurality of cutting surfaces on said mouth of said die such that said die initially engages the workpiece transversely said predetermined disposition of the layered structure and disposing said cutting surfaces on said mouth of the die to effect deeper cuts into the workpiece only after said die has initially engaged the workpiece transversely said predetermined disposition of the layered structure.

4,460,533
APPARATUS AND METHOD FOR THE HEAT TREATMENT OF MATERIALS

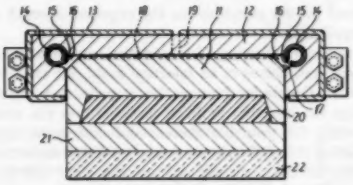
Robert W. Cox; Herbert E. Janikowski, both of Solihull; David L. Walker, Minsterley, and David Hands, Shrewsbury, all of England, assignors to British Gas Corporation and Rubber & Plastics Research Assoc. of G. Britain, both of, England

Filed May 7, 1982, Ser. No. 376,089

Claims priority, application United Kingdom, Apr. 9, 1981, 8114240

Int. Cl.³ B29C *25/00*

U.S. Cl. 264—236 **17 Claims**



1. A method of heat treating a product comprising transferring heat from hot permanent gas to a metallic heat transfer member by passing hot permanent gas through a gas distribution passageway which extends along the metallic heat transfer member such that the gas is directed over said metallic heat transfer member via at least one orifice, then passing the gas along at least one heat transfer passageway contiguous with the heat transfer member to exit through an exhaust outlet disposed at the downstream end of said heat transfer passageway and bringing the product to be treated into contact with said heat transfer member to transmit heat to the product.

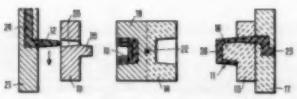
4,460,534
TWO-SHOT INJECTION MOLDING

Russell W. Boehm; William R. Keelen, both of Boulder County, Colo., and Herbert Rees, Dufferin County, Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 7, 1982, Ser. No. 415,771

Int. Cl.³ B29C *7/00*; B29D *9/00*; B29F *1/12*

U.S. Cl. 264—246 **13 Claims**



1. A two-material injection molding method for forming a molded part whose outer surface comprises an image formed of material A, surrounded by a shell of material B, the method comprising the steps of:

providing two female dies, said first female die providing the exterior shape of said molded part including a void defining said image, and said second female die accepting said part's exterior shape without obstructing said voids;

mating said first female die with a first male die and injection molding said material B, to thereby form a material B shell of said molded part, including a void in the shape of said image;

separating said first female die from said first male die, while leaving the material B shell of said molded part on said first male die;

mating said second female die with said first male die while said first male die supports said material B shell;

applying a force between said second female die and the part's material B shell to thereby retain the material B shell within said second female die, as said first male die is separated therefrom;

mating said second female die with a second male die which is similar in size than said first male die, to thereby define a cavity between said second male die and the interior surface of said material B shell; and injection molding the cavity thus formed with material A, to thereby form a finished part.

4,460,535
METHOD FOR PRODUCING FLYBACK TRANSFORMERS

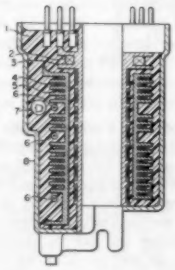
Makoto Kitoh, Yokohama; Tetsuo Tajima, Fujisawa; Noboru Terunuma; Noboru Mitsugi, both of Yokohama, and Akira Kageyama, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

Filed Dec. 4, 1981, Ser. No. 327,629

Claims priority, application Japan, Dec. 22, 1980, 55-180405

Int. Cl.³ B29C *6/00*; B29D *31/00*

U.S. Cl. 264—262 **13 Claims**



1. A method for producing flyback transformers which comprises subjecting a flyback transformer assembly, employing bobbins and a case made of poly(butylene terephthalate) or poly(ethylene terephthalate), to insulation treatment with an unsaturated polyester resin composition comprising 100 parts by weight of an unsaturated polyester resin and more than 6 parts by weight of an organic peroxide which is selected from the group consisting of benzoyl peroxide, t-butyl peroxybenzoate, t-butyl peroxyoctoate, t-butyl peroxy-2-ethylhexanoate, dicumyl peroxide and cumene hydroxyperoxide, said unsaturated polyester resin comprising: (a) an unsaturated polyester prepared by reacting a polyhydric alcohol with a polybasic acid composed of an unsaturated dibasic acid, a part of which may be substituted by a saturated dibasic acid and (b) a polymerizable monomer, whereby good adhesion between the hardened composition of said unsaturated polyester resin composition, and the bobbins and case, is achieved, said insulation treatment including encapsulating said bobbin in said case with said polyester resin composition.

4,460,536
LIFTING DEVICE FOR NUCLEAR POWER PLANTS

Friedrich Krieger, Würzburg, Fed. Rep. of Germany, assignor to Salzitter AG, Salzgitter, Fed. Rep. of Germany

Filed Jun. 15, 1981, Ser. No. 273,802

Int. Cl.³ G21C *19/20*

U.S. Cl. 376—268 **7 Claims**

1. A gripping head slidably arranged on a mast-like support, said gripping head having gripping pawls pivotable in vertical planes and for gripping the fuel element of a nuclear reactor, wherein said gripping-head comprises

(a) a pair of substantially horizontal members;

(b) one of said pair of members being fixed;

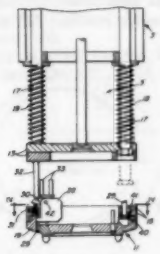
(c) the other of said pair of members being rotatable relative

to said fixed member about a common geometrical axis at right angles to the planes defined by said pair of members;

(d) a plurality of substantially hammer-shaped gripping pawls each pivotally suspended on the handle-like end thereof by said fixed member;

(e) each of said plurality of gripping pawls further having a hammerhead-like end having a front portion and a rear portion.

(f) said front portion being for engaging nuclear fuel elements;



(g) grooves in the underside of the rotatable member, each of said grooves being for controlling the rear portion of said gripping pawls so that each of said gripping pawls is pivoted about the point of suspension thereof in response to movements of said rotatable member relative to said fixed member; and

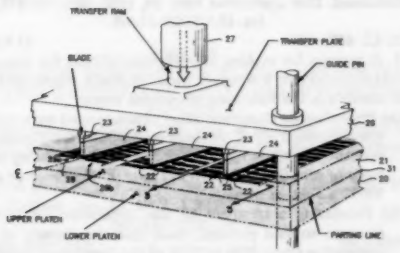
(h) a pivotable latch on said fixed member selectively engaging a pair of spaced slits on said rotatable member for arresting the rotation of said rotatable member in two predetermined limit positions thereof.

4,460,537

SLOT TRANSFER MOLDING APPARATUS AND METHODS

Preston J. Heinle, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 26, 1982, Ser. No. 401,575
Int. Cl.³ B29F 1/10
U.S. Cl. 264—272.17 **19 Claims**



13. A process for encapsulating objects comprising:

providing a mold having therein a plurality of mold cavities arranged in a row and adapted to contain said objects, and further having a slot-shaped encapsulant reservoir parallel with and adjacent to said row of mold cavities and coupled to said mold cavities by short channels;

then in arbitrary order, placing said objects in said mold cavities and placing said encapsulant in said slot-shaped encapsulant reservoir;

thereafter advancing a blade shaped ram in said slot-shaped reservoir to compress, liquify and transfer said encapsulant from said slot-shaped reservoir into said short channels; and

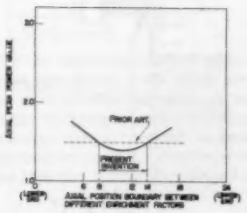
injecting said encapsulant from said short channels into all said mold cavity spaces at substantially the same time.

4,460,538

CORE CONSTRUCTION OF NUCLEAR REACTOR

Junichi Yamashita, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 15, 1978, Ser. No. 915,580
Claims priority, application Japan, Jun. 20, 1977, 52-73693
Int. Cl.³ G21C 1/02
U.S. Cl. 376—267 **7 Claims**



1. A core construction of a boiling-water nuclear reactor comprising an array of a plurality of fuel assemblies and a plurality of control rods, each fuel assembly including a plurality of fuel rods, and each control rod adapted to be inserted between selected ones of said fuel assemblies, wherein:

(a) each fuel assembly is divided into two sections substantially in the vicinity of the center of the length of each fuel assembly to form an upper section and a lower section, the lower section having a smaller mean infinite multiplication factor than the upper section;

(b) said control rods include two groups of control rods, one group of control rods being reactor power adjusting control rods which are at least partially inserted in the core during normal power operation of th reactor for adjusting reactor power, and the other group of control rods being reactor shutdown control rods which remain fully withdrawn from the core during the normal power operation in preparation for shutting down the reactor and are inserted in the core for shutting down the reactor; and

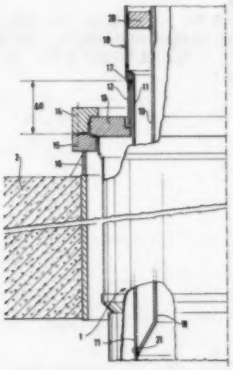
(c) each of said fuel assemblies located adjacent said reactor power adjusting control rods having an overall mean infinite multiplication factor smaller than the fuel assemblies located adjacent said reactor shutdown control rods when said reactor shutdown control rods are inserted in the core, each of said fuel assemblies located adjacent said reactor power adjusting control rods having a smaller overall mean uranium enrichment factor than each of said fuel assemblies located adjacent said reactor shutdown control rods, and wherein each of said fuel assemblies located adjacent said reactor power adjusting control rods has a mean uranium enrichment factor of about 1.1 Wt.% in the upper section thereof, a mean uranium enrichment factor of about 1.0 Wt.% in the lower section thereof, and an overall means uranium enrichment factor of about 1.1 Wt.%; and wherein each of said fuel assemblies located adjacent said reactor shutdown control rods has a mean uranium enrichment factor of about 2.2 Wt.% in the upper section thereof, a mean uranium enrichment factor or about 2.0 Wt.% in the lower section thereof, and an overall means uranium enrichment factor of about 2.1 Wt.%.

4,460,539

DEVICE PROVIDING ANTI-SEISMIC SUPPORT FOR AN APPARATUS IMMERSED IN THE BATH OF LIQUID ALKALI METAL SURROUNDING A FAST NEUTRON NUCLEAR REACTOR

Jean Andre, La Celle-Saint-Cloud, and Jacques Marjollet, Paris, both of France, assignors to Stein Industrie, Villacoublay, France

Filed Jun. 1, 1981, Ser. No. 268,833
Claims priority, application France, Jun. 2, 1980, 80 12190
Int. Cl.³ G21C 9/00
U.S. Cl. 376—285 **3 Claims**



1. In a fast neutron reactor comprising a bath of liquid metal circulating in a core of said reactor, a slab located above said bath of liquid metal, and at least one apparatus supported by said slab, traversing said slab and immersed in said bath of liquid metal, said apparatus including an envelope, an anti-seismic supporting device for supporting said apparatus on said slab, said supporting device comprising:

a support flange supported by said slab;

a vertically oriented sleeve connected to said flange, said sleeve surrounding said envelope and defining a space therebetween;

a supporting framework fixed on said sleeve at a position located at a predetermined height above said support flange for altering the natural frequency of said aparatus, said supporting framework being fixed at a predetermined level on said envelope of the apparatus remote from said predetermined height; and

at least one piece located between said sleeve and a top part of said envelope said piece being attached to one of said sleeve and said envelope, said at least one piece being sized and shaped so as to substantially fill said space between said sleeve and said top part of said envelope, whereby said sleeve and said piece take up horizontal displacements of said top part of the envelope while allowing a differential expansion of said framework and said envelope.

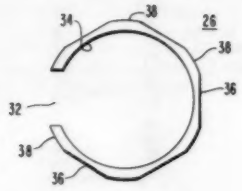
4,460,540

BURNABLE POISON ROD FOR A NUCLEAR REACTOR FUEL ASSEMBLY

Charles E. Funk, Penn Hills Township, Allegheny County, and Andrew S. Oneufer, North Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 30, 1981, Ser. No. 259,325
Int. Cl.³ G21C 7/10
U.S. Cl. 376—327 **2 Claims**

1. A burnable poison rod for use in a nuclear reactor fuel assembly comprising a pair of concentrically disposed tubes having an annular space therebetween, neutron absorbing pellets in said space, and means in opposite ends of the rod for sealing the space containing said pellets, and pellet stack retaining means in said space at one end of the rod for helping eliminate gaps between pellets and for releasably holding said pellets against longitudinal movement in the space when the rod is subjected to externally imposed forces, said retaining means being arranged to bear against the end pellet in said stack while imposing radially directed forces against the surface of one of said tubes for frictionally holding the retaining means in position, and said pellet stack retaining means including a C-shape spring clip having a gap extending completely through the clip wall in an axial direction, said clip having an inner surface complementary to the inner tube outer surface, and its outer surface shaped to provide less than full surface contact with



the outer tube inner walls, the walls of said clip having a thickness which corresponds with the radial force desired to be applied to the outer tube inner walls in order to hold the stacked pellets in position; and

wherein the spring clip is generally circular on the inside and has multiple alternating flat and circular areas on the outside, with its radial dimensions generally constant along its length, the flat areas of said clip being shaped to impart a retention force to the clip when the clip engages the outer tube inner surface, and the circular areas having a curvature matching the outer tube inner surface, said circular areas being arranged for surface contact with the outer tube inner walls to provide a frictional force which releasably holds said pellet stack against axial movement.

4,460,541

ALUMINUM POWDER METALLURGY

Ogle R. Singleton, and H. Marvin Edwards, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 112,631, Jan. 16, 1980, abandoned. This application Mar. 24, 1983, Ser. No. 478,283
Int. Cl.³ F16N 15/08
U.S. Cl. 419—42 **12 Claims**

1. A process for making a workpiece suitable for being hot worked to produce a wrought metal product, where said process comprises the following sequential steps:

(a) Providing an aluminum alloy characterized by a melting range of about 20° K. or more under Standard Conditions, said alloy being in the form of a powder consisting essentially of particles solidified at a rate on the order of about 1000° K./sec or more;

(b) Producing a compact by the application of isostatic pressure to said powder, such that the density of said compact is about 60% to 85% of the theoretical density of said alloy;

(c) Exposing said compact to a dynamic atmosphere which is essentially devoid of water and gaseous oxidants of said alloy and heating the composite to a temperature of up to about 650° K. to degas the surface films and to preferably remove H_2O as H_2O;

(d) While said compact is exposed to said atmosphere, further heating said compact such that its exterior surfaces attain temperatures at which about 2 to 20 wt% of said alloy would be liquid under Standard Conditions, volatilizing alloying materials from a liquid surface region to form a reduced volatile alloying material surface region of

about 0.1 to 1 millimeters, thereby raising the solidus temperature of said surface region at an equilibrium point causing resolidification of said surface region at said equilibrium point, and then cooling said compact such that its exterior surfaces attain temperatures of about 150° K. or more below the solidus of said alloy, such that said compact becomes sinter-sealed by attaining a Degree of Sealing of about 80% or more.

4,460,542

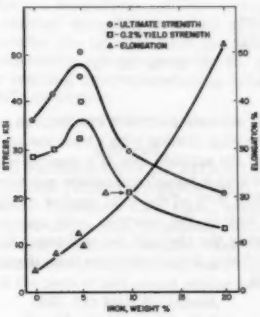
IRON-BEARING NICKEL-CHROMIUM-ALUMINUM-YTTRIUM ALLOY

Robert B. Herchenroeder, Kokomo, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed May 24, 1982, Ser. No. 381,477

Int. Cl.³ C22C *19/05*

U.S. Cl. 420—443 **13 Claims**



1. A high temperature oxidation resistant alloy of improved workability consisting essentially of, by weight, from 14 to 18% chromium, from 4 to 6% aluminum, from 2 to 6% iron, a small but effective yttrium content not exceeding 0.04% to promote oxidation resistance, up to 12% cobalt, up to 1% manganese, up to 1% molybdenum, up to 1% silicon, up to 0.25% carbon, up to 0.03% boron, up to 1% tungsten, up to 1% tantalum, up to 0.5% titanium, up to 0.5% hafnium, up to 0.5% rhenium, up to 0.04% of elements from the group consisting of elements 57 through 71 of the periodic table of the elements, balance essentially nickel; said nickel plus said cobalt being at least 66%.

4,460,543

PROCESS FOR PREPARATION OF ZINC POWDER FOR ALKALINE BATTERIES BY AMALGAMATION OF ZINC POWDER

Wolfgang Glaeser, Goslar, Fed. Rep. of Germany, assignor to Grillo-Werke AG, Duisburg-Hamborn, Fed. Rep. of Germany

Filed Apr. 6, 1983, Ser. No. 482,605

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213386; Apr. 10, 1982, 3213387

Int. Cl.³ C22C *18/00*

U.S. Cl. 420—513 **10 Claims**

1. A method for making zinc powder having a mercury content of 0.1–10% by weight for use in alkaline batteries which comprises:

(a) stirring zinc powder with metallic mercury in the presence of an amalgamation aid at 20°–150° C. in a closed system at a partial pressure of oxygen below 100 mbar;

(b) continuously removing excess amalgamation aid, water vapor and any volatile products formed from the system; and

(c) gradually raising the partial pressure of oxygen in the system to atmospheric pressure.

4,460,544

TEST TUBE FOR THE MEASUREMENT OF OIL MISTS

Kurt Leichnitz, Gross Grönau, Fed. Rep. of Germany, assignor to Drägerwerk AG, Fed. Rep. of Germany

Filed Apr. 18, 1983, Ser. No. 486,086

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1982, 3123742

Int. Cl.³ G01N *21/78, 33/28*

U.S. Cl. 422—59 **3 Claims**

1. A device for the measurement of oil mists in a test gas, comprising a glass tube having ends which are openable to permit a test gas to be directed therethrough, said glass tube being filled in order with respect to the direction of intended gas flow therethrough with: a breakable ampoule filled with sulfuric acid, a particulate air filter, a distributor layer of quartz glass grit, and an indicator layer of deactivated silica gel.

4,460,545

ENERGY-SAVING DEVICE FOR MANUFACTURING POLYETHYLENE

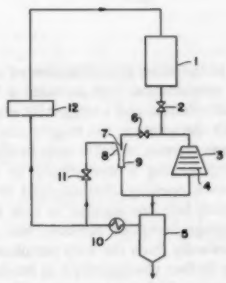
Guy Jouffroy, Saint Arnoult, and Bernard Martinot, Lillebonne, both of France, assignors to Societe Chimique des Charbonnages-CdF Chimie, France

Continuation of Ser. No. 16,540, Mar. 1, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,535

Claims priority, application France, Mar. 2, 1978, 78 06030

Int. Cl.³ B01J *12/02*

U.S. Cl. 422—131 **10 Claims**



1. An apparatus for polymerizing ethylene and for producing energy for use outside said apparatus comprising:

(a) a reactor comprising an inlet and an outlet, wherein said outlet discharges a mixture of ethylene and polyethylene;

(b) a turbine comprising an inlet, at least one stage comprised of a nozzle and a bladed wheel, and an outlet after the last stage of said turbine, wherein said turbine is connected to and drives an energy producing means for producing energy for use outside said apparatus;

(c) first conduit means connecting the outlet of said reactor with the inlet of said turbine;

(d) a separator comprising an inlet, a first outlet, and a second outlet, wherein said first outlet discharges polyethyl-

ene and wherein said second outlet discharges a gaseous mixture comprising ethylene;

(e) second conduit means connecting the outlet of said turbine to the inlet of said separator;

(f) a compressor comprising an inlet and an outlet, wherein said compressor has no connection with said turbine;

(g) third conduit means connecting said second outlet of said separator to the inlet of said compressor;

(h) fourth conduit means connecting the outlet of said compressor to the inlet of said reactor; and

(i) fifth conduit means, connecting said first conduit means and said second conduit means, said fifth conduit means including an expansion valve and further including an injector downstream of said expansion valve, said injector comprising a convergent ejection nozzle, a convergent means for mixing downstream from said ejection nozzle and a diffuser downstream from said means for mixing.

4,460,546

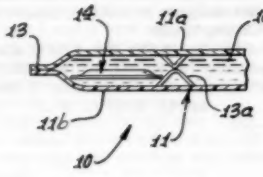
TRIGGER TO CONTROLLABLY INITIATE CRYSTALLIZATION

Imants P. Kapralis, 3020 S. Punta Del Este Dr., Hacienda Heights, Calif. 91745, and Harry Krukle, 7023 Bevis Ave., Van Nuys, Calif. 91405

Filed Aug. 11, 1980, Ser. No. 177,258

Int. Cl.³ B01D 9/02

U.S. Cl. 422—245 **9 Claims**



1. For use in initiating crystallization of a supercooled salt solution, the combination that includes a flexible container containing said solution, and a trigger located in the container in contact with the solution, the trigger comprising

(a) a thin, non-ferrous, metallic strip having a perimeter,

(b) said strip having a multiplicity of openings formed therein, each opening characterized as having opposed edges which face one another in near touching relation, said openings being of pin-hole size and everywhere spaced inwardly from the strip periphery,

(c) the strip further characterized as having two configurations between which it is bendable with snap-displacement causing (said edges to initiate) progressive exothermic crystallization of said salt in the solution,

(d) the strip being in the general form of a dished disc having a central portion and an outer portion surrounding said central portion, the outer portion having a curved periphery,

(e) said openings everywhere spaced inwardly from the disc periphery and located in at least one of said disc portions whereby said periphery is free of opening edges which could otherwise penetrate the container, the container consisting of plastic material,

(f) the strip having molecular structure which is impact oriented.

4,460,547

SEPARATING ACTINIDE IONS FROM AQUEOUS, BASIC, CARBONATE CONTAINING SOLUTIONS USING MIXED TERTIARY AND QUATERNARY AMINO ANION EXCHANGE RESINS

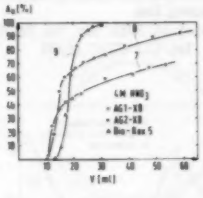
Ali Sameh, Ettlingen, and Jürgen Haag, Karlsruhe, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Oct. 28, 1982, Ser. No. 437,511

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1981, 3144974

Int. Cl.³ C22B 60/02

U.S. Cl. 423—7 **7 Claims**



1. Process for separating actinide ions from an aqueous basic, carbonate containing solution with a basic ion exchanger comprising: sorbing the actinide ions at a weakly basic anion exchanger comprising a polyalkene matrix provided in the majority (more than 50% of the total number of amino groups) with tertiary and in the minority with quaternary amino groups, separating the charged ion exchanger from the solution, and then eluting the actinide ions from the ion exchanger with nitric acid.

4,460,548

EXTRACTION OF URANIUM WITH DIPHOSPHONIC COMPOUNDS

Georges Sturtz, Brest, France, assignor to Societe Nationale Elf Aquitaine (Production), France

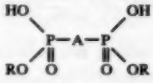
Filed Jul. 7, 1980, Ser. No. 166,363

Claims priority, application France, Jul. 9, 1979, 79 17736

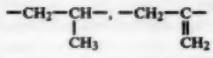
Int. Cl.³ C01G 43/00

U.S. Cl. 423—10 **10 Claims**

1. A method for the extraction of uranium from aqueous solution containing 10–45% by weight of phosphoric acid which comprises contacting said aqueous solution with a composition comprising an organic liquid containing 1 to 30% by weight of a diphosphonic diacid diester of the formula



in which A is a grouping selected from the group consisting of $-CH_2-CH_2-$,



and $-CH_2-CH=CH$ and R is a C_6 to C_{18} alkyl.

4,460,549

RECOVERY OF URANIUM FROM WET-PROCESS PHOSPHORIC ACID

Günther Schimmel, Erftstadt; Reinhard Gradl, Hürth, and Gero Heymer, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 30, 1981, Ser. No. 229,978

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004925

Int. Cl.³ C01G 43/00

U.S. Cl. 423—10 5 Claims

1. In the process for recovering uranium from uranium-containing crude wet process phosphoric acid, by extracting phosphoric acid from said wet process phosphoric acid with an organic extractant for phosphoric acid which is immiscible or only partially miscible with water, with the resultant formation of two liquid phases including an organic phosphoric acid extract and a raffinate residue and separating the two phases, the improvement which comprises: heating said separated raffinate residue to a temperature sufficient to expel dissolved or emulsified residual extractant from said raffinate residue, extracting thereafter the uranium from the raffinate residue with a water-immiscible solvent extractant for uranium, and separating the resulting uranium-containing extract from the undissolved raffinate portion.

4,460,550

PROCESS FOR PRODUCTION OF TITANIUM DIOXIDE FROM TITANIFERROUS ORE

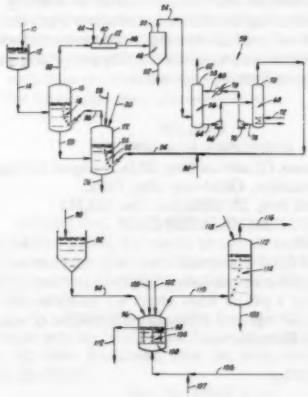
Theodore A. Rado, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 480,252, Mar. 30, 1983. This application May 3, 1983, Ser. No. 491,216

The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.

Int. Cl.³ C01G 23/02, 23/07

U.S. Cl. 423—79 9 Claims



1. A method for producing titanium dioxide from natural or synthetic titanium ore, carbonaceous reductant and chlorine and oxygen comprising the steps of:

providing a first quantity of salt, melting at between about 600 degrees centigrade and about 900 degrees centigrade, in molten form having a temperature between about 800 degrees centigrade and about 1000 degrees centigrade to produce a chlorination zone;

introducing the titanium ore and the reductant into the chlorination zone to produce a loaded chlorination zone;

passing chlorine into the loaded chlorination zone to produce a first precursor stream comprising titanium tetrachloride wherein the molten salt cooperates to retain relatively fine particles of titanium ore and reductant so such relatively fine particles do not enter into the first product precursor stream, thereby permitting smaller sizes of titanium ore and reductant particles to be utilized, and further wherein chloride salt impurities are formed, at least some of which form substantially nonvolatile double salts with the molten salt to reduce impurities in the first puecursor stream;

providing a second quantity of salt in molten form to produce a scrubbing zone;

passing the first precursor stream from the loaded chlorination zone into the scrubbing zone, wherein the first precursor stream is defined further as comprising formed chloride salt impurities and the molten salt of the scrubbing zone is defined further as cooperating to form substantially nonvolatile double salts with at least some of said formed chloride salt impurities to procude a second precursor stream comprising purified titanium tetrachloride;

providing a stream of oxygen preheated to about 1000 degrees centigrade;

passing the second precursor stream from the scrubbing zone and the stream of oxygen to a combustion zone to produce a combustible mixture;

combusting the combustible mixture in the combustion zone to form a product mixture comprising titanium dioxide, carbon dioxide and chlorine; and

recovering the titanium dioxide from the product mixture.

4,460,551

PROCESS AND DEVICE FOR MANUFACTURING SYNTHETIC ANHYDROUS CALCIUM SULPHATE AND PURE HYDROFLUORIC ACID

Dieter Boese, Therwil, and René Etter, Pratteln, both of, Switzerland, assignors to Buss AG, Basel, Switzerland

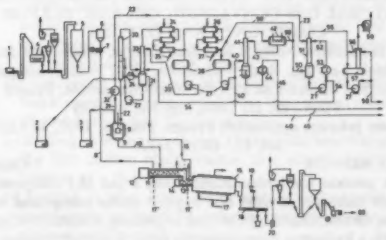
PCT No. PCT/CH81/00146, 371 Date Dec. 28, 1982, 102(e) Date Dec. 28, 1982, PCT Pub. No. WO82/03848, PCT Pub. Date Nov. 11, 1982

PCT Filed Dec. 28, 1981, Ser. No. 456,090

Claims priority, application Switzerland, Apr. 28, 1981, 2745/81

Int. Cl.³ C01B 7/08, 7/18; C01F 11/46

U.S. Cl. 423—166 11 Claims



1. In a process for the production of synthetic anhydrite and pure hydrofluoric acid in a reactor having at least two stages in which first reactor stage fluorspar and a hot acid mixture are admitted to initiate the reaction of calcium fluoride with sulfuric acid and produce gases including hydrogen fluoride gases followed by treating said gases in a scrubber with sulphuric acid to remove dust and water, said hot acid mixture comprising sulphuric acid, oleum and previously used scrubbing acid, that improvement consisting of reducing fluorine compounds from the scrubbing acid after it has been used for scrubbing by heating said scrubbing acid to a temperature from 100° C. up to 200° C. in a zone separate from contact with hydrogen fluoride containing process streams at normal pressure prior to addition of said scrubbing acid into the said acid mixture, the fluorine

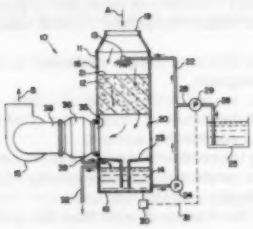
occurring in any form in the acid mixture of sulphuric acid, oleum and previously used scrubbing acid fed to the reactor corresponds at most to an amount of hydrogen fluoride of 1%.

4,460,552

PROCESS FOR THE SEPARATION OF AIR COMPONENTS, SUCH AS DIFFICULTLY ABSORBABLE AIR IMPURITIES, OUT OF AIR-GAS MIXTURES

Erhard Zakrzewski, D-Höhr-Grenzhausen, Fed. Rep. of Germany, assignor to Steuler Industriewerke, G.m.b.H., D-Höhr-Grenzhausen, Fed. Rep. of Germany

Filed May 26, 1981, Ser. No. 267,407
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—210 **11 Claims**



1. In a process for the separation of chemical air impurities from air-gas mixtures comprising the steps of:
distributing an absorbent medium in a reaction tower;
introducing said air-gas mixture to said tower; and
creating a flow of air through said tower whereby said air-gas mixture is drawn through said tower and exits from said tower, the improvement comprising carrying out the process with at least one pack of stratified nonwoven fabric filter mats in the tower, the absorbent medium being distributed over said filter mat and the flow of air passing through said filter mat whereby the air is substantially freed of chemical impurities.

4,460,553

PROCESS FOR THE HYDRODESULFURIZATION OF NATURAL GAS CONTAINING ORGANIC SULFUR COMPOUNDS AND OXYGEN

André Deschamps, Noisy le Roi; Jean Cosyns, Maule, and Jean-Francois Le Page, Rueil-Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 15, 1983, Ser. No. 466,690
Claims priority, application France, Feb. 15, 1982, 82 02550
Int. Cl.³ B01D *53/36*
U.S. Cl. 423—219 **7 Claims**

1. A process for hydrodesulfurizing a gas (A) comprising together methane, at least one organic sulfur compound and oxygen, characterized by the step of passing a mixture of said gas with a hydrogen containing gas on a palladium catalyst at a temperature of 300° to 450° C.

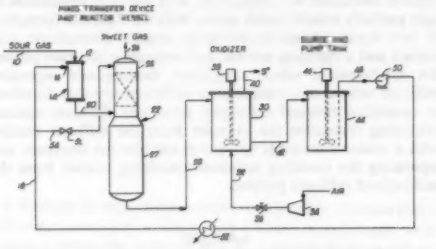
4,460,554

METHOD OF REMOVING H_2S FROM A GAS STREAM UTILIZING BORON-VANADIUM, QUINONE SOLUTION AND IRON SCAVAGING COMPOSITION

Ronald E. Shafer, Overland Park, Kans., assignor to Purtec Systems, Inc., Overland Park, Kans.

Filed Mar. 31, 1983, Ser. No. 480,761
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—223 **12 Claims**

1. In a method of removing H_2S from a sour gas by oxidation of the H_2S to free sulfur utilizing equipment which includes steel components, the improved steps of:
contacting the sour gas with a liquid alkaline absorption medium capable of absorbing H_2S with at least a part thereof forming $[HS^-]$ ions,
said liquid absorption medium containing a vanadium-boron complex wherein the ratio of boron to vanadium on an elemental basis is such that the $[HS^-]$ ions are oxidized to an extent to produce elemental sulfur as the vanadium undergoes reduction and the boron constituent inhibits formation of insoluble vanadium sulfide compounds and consequent thiosulfate formation upon reoxidation of the vanadium;
providing a quantity of a quinone type oxidation catalyst in said absorption medium which has substituted radicals on the aromatic ring structure threof separated by two carbon atoms and selected from the group consisting of hydroxy and keto;



said oxidation catalyst being present in a concentration sufficient to enhance oxidation of the reduced vanadium;
regenerating the absorption medium utilizing a source of oxygen to oxidize the reduced vanadium; and
maintaining a sufficient quantity of an iron cyanide compound in said alkaline absorption medium which is compatible with said vanadium-boron complex and the quinone type catalyst and that is capable of reacting with ionic iron entering the absorption medium from the steel components of said processing equipment to form an essentially insoluble precipitate thereby preventing solubilized iron from forming iron sulfide.

4,460,555

AMMONIA SCAVENGER

Ralph P. Thompson, Oklahoma City, Okla., assignor to Organon Teknika Corporation, Oklahoma City, Okla.

Filed Aug. 25, 1983, Ser. No. 526,311
Int. Cl.³ C01B *25/26*
U.S. Cl. 423—309 **18 Claims**

12. A method for the preparation of a particulate substantially water-insoluble magnesium phosphate product containing slurry having a pH of from about 6.5 to about 8.5, said product having an empirical composition exclusive of water of hydration of the formula:

$$(Mg)_x(H)_y(PO_4)_z$$

wherein
x is from about 0.75 to about 1.4,
y is from about 0.2 to about 1.5, and
z is 1,
comprising the steps of:
(a) mixing magnesium hydroxide with water containing a phosphate ion-containing buffer having a pH of from about 6.5 to about 8.5 to form a slurry, and
(b) slowly adding H_3PO_4 to the slurry of step (a) to form a particulate substantially water-insoluble magnesium phosphate product having an empirical composition exclusive of water of hydration of the formula:

$$(Mg)_x(H)_y(PO_4)_z$$

wherein

x is from about 0.75 to about 1.4,

y is from about 0.2 to about 1.5, and

z is 1.

4,460,556

METHOD FOR PRODUCING HIGH PURITY SI FOR SOLAR CELLS

Hubert Aulich, Munich; Karl-Heinz Eisenrith, Schliersee; Friedrich-Wilhelm Schulze, Eching, and Hans-Peter Urbach, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 20, 1983, Ser. No. 486,685

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3215981

Int. Cl.³ C01B *33/02*

U.S. Cl. 423—350 **14 Claims**

1. In a process for producing highly purified silicon which is suitable for fabrication of solar cells, in accordance with a carbo-thermal reduction process wherein highly purified silicon dioxide is utilized as a starting material and finely pulverized carbon is utilized as a reduction agent, the improvement comprising:

admixing a pulverized carbon-containing material having impurities therein with an acid-resistant, high temperature-tolerant bonding agent to form a plurality of carbon-containing granulates;

admixing purified particulate SiO_2 with an acid-resistant, high temperature-tolerant bonding agent to form a plurality of purified SiO_2-containing granulates;

contacting at least said carbon-containing granulates with a hot inorganic acid solution so as to extract substantially any impurities present therein and obtain substantially purified carbon-containing granulates; and

admixing the resultant purified carbon-containing granulates with said purified SiO_2-containing granulates and directly reducing the SiO_2 with carbon via the carbo-thermal reduction process to attain relatively pure silicon suitable for fabrication into solar cells.

4,460,557

STARTING PITCHES FOR CARBON FIBERS

Hiroaki Takashima, Kawasaki; Osamu Kato, Yokahama; Seiichi Uemura, Tokyo; Shunichi Yamamoto, and Takao Hirose, both of Kamakura, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,670

Claims priority, application Japan, Nov. 18, 1981, 56-183690; Nov. 18, 1981, 56-183691; Dec. 28, 1981, 56-209650; Dec. 28, 1981, 56-209651

Int. Cl.³ D01F *9/14*

U.S. Cl. 423—447.1 **7 Claims**

1. A process for the production of carbon fibers in which a starting pitch is heat treated to obtain a precursor pitch which is melt spun to obtain precursor pitch fibers, the pitch fibers are infusibilized and the infusibilized pitch fibers are carbonized or graphitized, wherein the starting pitch is a specific one obtained by heat treating at least one member selected from the group consisting of coal tar and coal liquefaction pitch at a temperature of 400°–500° C. and a hydrogen pressure of at least 20 kg/cm² without the addition of a hydrogenation catalyst and further heating at a temperature of 340°–450° C. and a pressure up to atmospheric pressure under a stream of an inert gas.

4,460,558

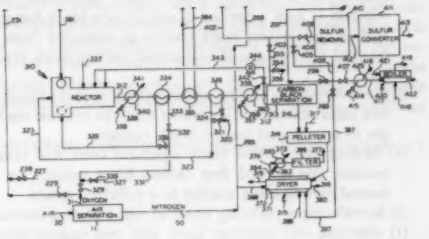
RECOVERY OF CARBON BLACK

Paul H. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 2, 1981, Ser. No. 308,062

Int. Cl.³ C01B *31/02*; C09C *1/48*

U.S. Cl. 423—450 **10 Claims**



1. comprising:

(a) feeding air to an air separation means to form a first gaseous stream comprising at least 95 volume percent nitrogen and a second gaseous stream comprising at least 50 volume percent free oxygen,

(b) feeding at least a portion of said second gaseous stream comprising at least 50 volume percent free oxygen to a first carbon black reactor,

(c) feeding a feedstock to said first carbon black reactor,

(d) combusting at least a portion of said feedstock to said first carbon blak reactor in the presence of said second gaseous stream comprising at least 50 volume percent oxygen to form a hot combustion gas,

(e) decomposing at least a portion of said feedstock fed to said first carbon black reactor in the presence of said hot combustion gas of (d) in said first carbon black reactor under conditions conducive to the formation of carbon black to form an effluent of said first carbon black reactor comprising carbon black and residual reaction gas,

(f) passing a quench fluid to said first carbon black reactor to cool the effluent of said carbon black reactor to a temperature in the range of about 1200° to about 2000° F.,

(g) directing the effluent of said first carbon black reactor to a first carbon black separation means wherein at least a portion of said carbon black formed in said first carbon black reactor is separated from said residual reaction gas of the first carbon black reactor,

(h) recovering the carbon black formed in said first carbon black reactor and separated from the residual reaction gas of said first carbon black reactor,

(i) feeding at least a portion of the residual reaction gas from the first carbon black reactor to a second carbon black reactor as a fuel gas,

(j) feeding at least a portion of said second gaseous stream comprising at least 50 volume percent oxygen to said second carbon black reactor,

(k) feeding a feedstock to said second carbon black reactor,

(l) combusting at least a portion of said residual reaction gas from the first carbon black reactor which is fed to said second carbon black reactor as a fuel gas in the presence of at least a portion of said second gaseous stream comprising at least 50 volume percent oxygen to form a hot combustion gas,

(m) combusting at least a portion of said feedstock fed to said second carbon black reactor in the presence of at least a portion of said second gaseous stream comprising at least 50 volume percent oxygen to form a hot combustion gas,

(n) decomposing at least a portion of said feedstock fed to said second carbon black reactor in the presence of said hot combustion gas of (l) and (m) and said second carbon black reactor under conditions conducive to the formation

of carbon black to form an effluent from said second carbon black reactor comprising carbon black in a residual reaction gas,

(o) passing a quench flow to said second carbon black reactor to cool the effluent of said second carbon black reactor to a temperature in the range of about 1200° to about 2000° F.,

(p) directing the effluent from said second carbon black reactor to a second carbon black separation means wherein at least a portion of said carbon black formed in said second carbon black reactor is separated from said residual reaction gas of said second carbon black reactor, and

(q) recovering the carbon black formed in said second carbon black reactor and separated from the residual reaction gas of said second carbon black reactor

(r) feeding said carbon black separated from said residual reaction gas of said first carbon black reactor or said second carbon black reactor to a pelleting means,

(s) introducing a pelleting agent to said pelleting means,

(t) admixing said pelleting agent with said carbon black in said pelleting means to form pellets of carbon black,

(u) feeding the pellets of carbon black to a means for removing excess pelleting agent from said pellets of carbon black in the presence of at least a portion of said first gaseous stream comprising at least 95 volume percent nitrogen, and

(v) recovering the pellets of carbon black so formed.

4,460,559

TUMOR LOCALIZATION AND THERAPY WITH LABELED ANTIBODIES SPECIFIC TO INTRACELLULAR TUMOR-ASSOCIATED MARKERS

Milton D. Goldenberg, 11837 Gainsborough Rd., Potomac, Md. 20854

Continuation of Ser. No. 126,261, Mar. 3, 1980, Pat. No. 4,361,544. This application May 4, 1982, Ser. No. 374,662

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.[3] **A61K** *43/00, 49/00*

U.S. Cl. 424—1.1 **17 Claims**

1. A method for detecting and localizing a tumor which either produces or is associated with an intracellular marker substance, which comprises injecting a subject parenterally with an antibody specific kto said marker substance and radiolabeled with a pharmacologically inert radioisotope capable of detection using a photoscanning device, and subsequently scanning with said device to detect and locate the site or sites of uptake of said labeled antibody by said tumor; with the proviso that when said antibody is an antibody specific to human chlorionic gonadotropin or its beta-subunit, said radioisotope is other than Tc-99m.

4,460,560

DRUG DELIVERY BY POLYMERIC CARRIERS

Zoltán A. Tökes, Los Angeles; Kathryn E. Rogers, and Alan Rembaum, both of Pasadena, all of Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed Jun. 18, 1982, Ser. No. 389,537

Int. Cl.[3] **A61K** *49/00, 43/00*

U.S. Cl. 424—1.1 **18 Claims**

1. A pharmaceutical preparation in which the cytostatic or cytotoxic effect of a drug is improved by perturbing the membranous domains of a target cell or microorganism, comprising a drug covalently coupled to the surface of an organic polymer, in a manner such that the drug remains so coupled while having the cytostatic or cytotoxic effect on said toxic cell in the essential absence of endocytosis, the polymer being otherwise biocompatible with said cell and having a diameter in the range of about 100 angstroms to 1.5 microns, said preparation being essentially free of immunoglobulins.

17. An analytical method for quantifying the drug sensitivity of a cell, comprising the steps of:

preparing a preparation according to claim 1 wherein said polymer bears a tracer substance;

applying said preparation to a cell; and

measuring, by means for detecting said tracer, the extent to which said reagent is covalently bound to said cell.

18. The method of claim 17 in which said tracer is selected from the group consisting of fluorescent materials, radioactive materials or heavy metals.

4,460,561

TUMOR LOCALIZATION AND THERAPY WITH LABELED ANTIBODIES SPECIFIC TO INTRACELLULAR TUMOR-ASSOCIATED MARKERS

M. David Goldenberg, 636 Lakeshore Dr., Lexington, Ky. 40502

Continuation-in-part of Ser. No. 126,261, Mar. 3, 1980, Pat. No. 4,361,544. This application Sep. 8, 1982, Ser. No. 415,876

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.[3] **A61K** *43/00, 49/00*

U.S. Cl. 424—1.1 **17 Claims**

1. A method for detecting and localizing a tumor which either produces or is associated with an intracellular marker substance, which comprises injecting a human subject parenterally with an antibody specific to said marker substance and radiolabeled with a pharmacologically inert radioisotope capable of detection using a photoscanning device, and with indifferent immunoglobulin from the same or different species as that used to prepare said specific antibody, said indifferent immunoglobulin being radiolabeled with a pharmacologically inert radioisotope of a different element from that used to label the specific antibody and emitting at an energy capable of independent detection using said photoscanning device, the radiolabeling be so effected that the kinetics and distribution of the radiolabeled specific antibody and indifferent immunoglobulin in said subject are substantially the same during the time period required for scanning; and scanning the subject with said photoscanning device, the level of activity of the labeled indifferent immunoglobulin being used to determine the distribution of background activity due to non-targeted specific antibody, said background activity being subtracted from the total activity of specific antibody, whereby the activity of substantially only the targeted tumor-localized specific antibody is determined and said tumor is thereby detected and localized.

4,460,562

POLYMERIC DIFFUSION MATRIX CONTAINING PROPRANOLOL

Alec D. Keith, Miami, Fla., and Wallace Snipes, State College, Pa., assignors to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation of Ser. No. 337,386, Jan. 6, 1982, which is a continuation-in-part of Ser. No. 281,322, Jul. 8, 1981, abandoned, which is a continuation-in-part of Ser. No. 163,262, Jun. 26, 1980, which is a continuation-in-part of Ser. No. 109,242, Jan. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 2,565, Jan. 11, 1979, abandoned. This application Mar. 30, 1983, Ser. No. 480,368

Int. Cl.[3] A61L 15/03; A61F 13/00; A61K 9/70, 47/00

U.S. Cl. 424—28 8 Claims

1. A self-supporting polymeric diffusion matrix for the sustained release of propranolol to deliver transdermally said propanolol to a patient in need of a beta-andrenergic blocking agent, said matrix comprising from about 1 to about 60% of a polar plasticizer, from about 6 to about 30% by weight of at least 90% hydrolyzed polyvinyl alcohol molecular weight of about 50,000 to about 150,000, from about 2 to about 30% by weight polyvinylpyrrolidone molecular weight of about 15,000 to about 85,000, and a pharmaceutically transdermally effective amount of propanolol, a beta-adrenergic blocking agent indicated for the control of hypertension, arrhythmias and migraine, when applied to the skin of said patient.

4,460,563

PROCESS FOR PREPARING MICROCAPSULES IN A LIQUID VEHICLE

Massimo Culanchi, Monza, Italy, assignor to Eurand S.p.A., Milan, Italy

Filed Apr. 2, 1981, Ser. No. 250,406

Claims priority, application Italy, Apr. 9, 1980, 21271 A/80

Int. Cl.[3] B01J 13/02; B05D 7/00; B32B 9/02; A61K 9/62

U.S. Cl. 424—35 16 Claims

1. A process for preparing microcapsules in a liquid vehicle, comprising the following steps:

(1) dissolution of a membrane-forming cellulosic polymer in a solvent which is the microencapsulation vehicle;

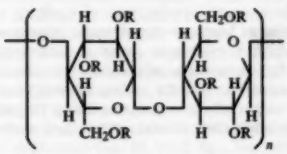
(2) addition of cores of a substance to be microencapsulated to said solution;

(3) formation of a coacervate by adding a substance adapted to cause phase separation;

(4) deposition of the coacervate, forming a continuous coating of polymer around the cores of the substance; and

(5) solidification of the polymer;

the improvement comprising the fact that the membrane-forming cellulosic polymer is a cellulose phthalate having the following chemical structure:



wherein R is hydrogen or a methyl, hydroxypropyl, carboxybenzoyl, 2-(2-carboxybenzoyl)propyl, or acetyl group, at least one R being always carboxybenzoyl, that the polymer is dissolved in aqueous or buffer solution, and that the phase separator is a substance causing phase separation of the cellulose phthalate from aqueous solution at a pH≧5.

4,460,564

ANTICARIES COMPOSITIONS

Tibor Sipos, Lebanon, N.J., assignor to Johnson & Johnson Products Inc., New Brunswick, N.J.

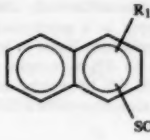
Filed Nov. 18, 1982, Ser. No. 442,697

Int. Cl.[3] A61K 7/16, 7/18

U.S. Cl. 424—52 6 Claims

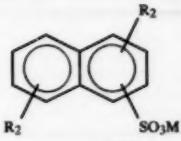
1. In a composition for preventing dental caries consisting essentially of a pharmaceutically acceptable oral hygiene vehicle containing an effective concentration to prevent caries of at least one pharmaceutically acceptable fluoride salt; the improvement which consists of including therewith a fluoride ion activating enhancing amount of a pharmaceutically acceptable sulfonated alkylnaphthalene selected from the group consisting of:

monoalkylnaphthalene monosulfonate salts of structure (A),



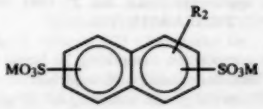
(A)

dialkylnaphthalene monosulfonate salts of structure (B),



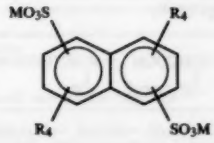
(B)

monoalkylnaphthalene disulfonate salts of structure (C),



(C)

and dialkylnaphthalene disulfonate salts of structure (D),



(D)

wherein R_1 is a linear or branched alkyl having 8 to 20 carbon atoms, R_2 is a linear or branched alkyl having 8 to 20 carbon atoms, R_3 is a linear or branched alkyl having 8 to 20 carbon atoms, R_4 is a linear or branched alkyl having 8 to 20 carbon atoms, and M is selected from the group consisting of lithium, sodium, potassium, calcium, magnesium, zinc, copper, aluminum, ammonium and the substituted ammonium ions derived from pharmaceutically acceptable organic amines.

4,460,565

ANTICARIOGENIC REMINERALIZING DENTIFRICE

Jan Weststrate, and Ede M. Staal, both of Amersfoort, Netherlands, assignors to Intradal N.V., Amersfoort, Netherlands

Filed Jul. 2, 1982, Ser. No. 394,725

Claims priority, application Netherlands, Jul. 3, 1981, 8103209

Int. Cl.³ A61K 7/16, 7/18

U.S. Cl. 424—52 19 Claims

1. A dentifrice having anticariogenic and remineralizing properties, comprising:

(a) a fluoride selected from the group consisting of alkali metal fluorides, alkaline earth metal fluorides, and ammonium fluoride;

(b) an alkali metal fluorophosphate;

(c) a soluble cyclic alkali metal phosphate;

(d) a soluble linear phosphate; and

(e) a calcium containing substance, selected from the group consisting of calcium citrate and calcium tartrate,

and wherein the concentration of components (a)+(b), calculated as F, is 250–500 ppm in a mouth wash, 1000–1500 ppm in a toothpaste, 5000–7500 ppm in a prophylactic paste, and 10,000–15,000 ppm in an application liquid or gel; the concentration of component (c) is 0.1–5% by weight; the concentration of component (e) is 0.05–5% by weight; and the concentration of component (d) is such to provide a Ca:P atomic ratio of about 1.66:1.

4,460,566

HAIR RINSE COMPOSITION

Yoshiaki Abe, Tokyo, and Rikio Tsushima, Wakayama, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

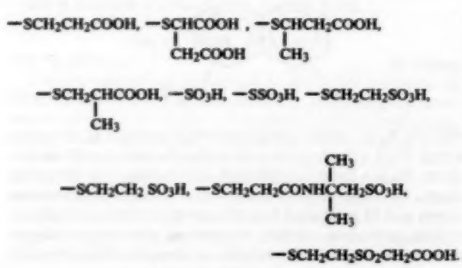
Filed Jan. 20, 1982, Ser. No. 341,054

Claims priority, application Japan, Jan. 27, 1981, 56-10471

Int. Cl.³ A61K 7/06

U.S. Cl. 424—70 5 Claims

1. A hair rinse composition comprising, in liquid medium, 0.1–10 wt% of at least one decomposition derivative of keratin material selected from the group consisting of (1) salts of decomposition products obtained by oxidation of keratin material to convert the disulfide bonds to sulfonic acid groups, and (2) salts of derivatives at thiol groups of decomposition products obtained by reduction of keratin material, wherein the derivative at the thiol groups is a member selected from the group consisting of $-SCH_2COOH$,



4,460,567

QUATERNARY, COPOLYMERIC, HIGH MOLECULAR WEIGHT AMMONIUM SALTS BASED ON ACRYLIC COMPOUNDS AND THEIR USE IN COSMETICS

Dieter Strasilla, Weil am Rhein, Fed. Rep. of Germany; Hubert Meindl, Riehen, Switzerland; Laszlo Moldovanyi, Basel, Switzerland, and Charles Fearnley, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

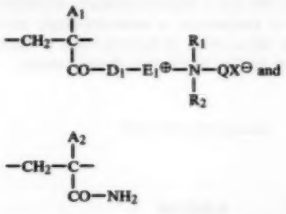
Division of Ser. No. 286,920, Jul. 27, 1981, Pat. No. 4,419,344.

This application Sep. 28, 1982, Ser. No. 425,601

Int. Cl.³ A61K 7/06, 7/11

U.S. Cl. 424—70 14 Claims

12. A method of hair treatment to give ease of wet and dry combing which comprises the step of applying a cosmetic which contains at least one copolymeric, quaternary ammonium salt which is soluble or forms a microemulsion in an aqueous surfactant system, which has a molecular weight distribution of 10^4 to 10^9, the molecular weight of at least 5 percent by weight of the copolymer being 10^7 and 10^9, and comprises, in any order, recurring structural elements of the formulae



in which A_1 and A_2 are each hydrogen or methyl, D_1 is oxygen or —NH—, E_1 is alkylene having 1 to 4 carbon atoms which is unsubstituted or substituted by hydroxyl, R_1 and R_2 are each methyl or ethyl, Q is alkyl or hydroxy-alkyl having 1 to 4 carbon atoms or benzyl and $X^{\ominus}$ is the radical of at least one anionic sarcosinate surfactant.

4,460,568

QUATERNARY, COPOLYMERIC, HIGH MOLECULAR WEIGHT AMMONIUM SALTS BASED ON ACRYLIC COMPOUNDS, THEIR PREPARATION, AND THEIR USE IN COSMETICS

Dieter Strasilla, Weil am Rhein, Fed. Rep. of Germany; Hubert Meindl, Riehen, Switzerland; Laszlo Moldovanyi, Basel, Switzerland, and Charles Fearnley, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 286,920, Jul. 27, 1981, Pat. No. 4,419,344.

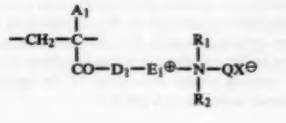
This application Sep. 28, 1982, Ser. No. 425,598

Claims priority, application Switzerland, Aug. 1, 1980, 5876/80

Int. Cl.³ A61K 7/06, 7/11

U.S. Cl. 424—70 15 Claims

13. A method of hair treatment to give ease of wet and dry combing which comprises the step of applying a cosmetic which contains at least one copolymeric, quaternary ammonium salt which is soluble or forms a microemulsion in an aqueous surfactant system, which has a molecular weight distribution of 10^4 to 10^9, the molecular weight of at least 5 percent by weight of the copolymer being 10^7 and 10^9, and comprises, in any order, recurring structural elements of the formulae



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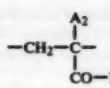


and in which A_1 and A_2 are each hydrogen or methyl, D_1 is oxygen or —NH—, E_1 is alkylene having 1 to 4 carbon atoms which is unsubstituted or substituted by hydroxyl, R_1 and R_2 are each methyl or ethyl, Q is alkyl or hydroxy-alkyl having 1 to 4 carbon atoms or benzyl and $X^{\ominus}$ is the radical of at least one anionic zwitterionic surfactant selected from the group consisting of an N-alkyl-alpha-iminodipropionate and an imidazolinium-dicarboxylic acid derivative which is alkyl-substituted in the 2-position.

4,460,569

QUATERNARY, COPOLYMERIC, HIGH MOLECULAR WEIGHT AMMONIUM SALTS BASED ON ACRYLIC COMPOUNDS AND THEIR USE IN COSMETICS

Dieter Strasilla, Weil am Rhein, Fed. Rep. of Germany; Hubert Meindl, Riehen, Switzerland; Laszlo Moldovanyi, Basel, Switzerland, and Charles Fearnley, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

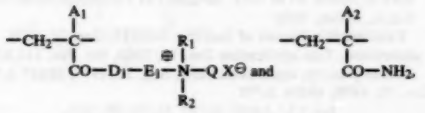
Division of Ser. No. 286,920, Jul. 27, 1981, Pat. No. 4,419,344. This application Sep. 28, 1982, Ser. No. 425,599

Claims priority, application Switzerland, Aug. 1, 1980, 5876/80

Int. Cl.³ A61K *7/06, 7/11*

U.S. Cl. 424—70 **14 Claims**

12. A method of hair treatment to give ease of wet and dry combing which comprises the step of applying a cosmetic which contains at least one copolymeric, quaternary ammonium salt which is soluble or forms a microemulsion in an aqueous surfactant system, which has a molecular weight distribution of 10^4 to 10^9, the molecular weight of at least 5 percent by weight of the copolymer being 10^7 and 10^9, and comprises, in any order, recurring structural elements of the formulae



in which A_1 and A_2 are each hydrogen or methyl, D_1 is oxygen or —NH—, E_1 is alkylene having 1 to 4 carbon atoms which is unsubstituted or substituted by hydroxyl, R_1 and R_2 are each methyl or ethyl, Q is alkyl or hydroxy-alkyl having 1 to 4 carbon atoms or benzyl and $X^{\ominus}$ is the radical of at least one anionic sulfosuccinate surfactant.

4,460,570

QUATERNARY, COPOLYMERIC, HIGH MOLECULAR WEIGHT AMMONIUM SALTS BASED ON ACRYLIC COMPOUNDS AND THEIR USE IN COSMETICS

Dieter Strasilla, Weil am Rhein, Fed. Rep. of Germany; Hubert Meindl, Riehen, Switzerland; Laszlo Moldovanyi, Basel, Switzerland, and Charles Fearnley, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

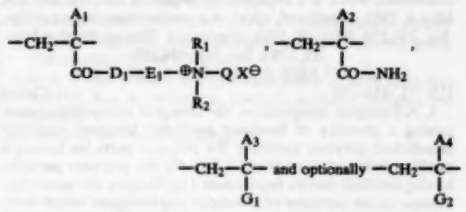
Division of Ser. No. 286,920, Jul. 27, 1981, Pat. No. 4,419,344. This application Sep. 28, 1982, Ser. No. 425,596

Claims priority, application Switzerland, Aug. 1, 1980, 5876/80

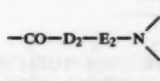
Int. Cl.³ A61K *7/06, 7/11*

U.S. Cl. 424—70 **14 Claims**

12. A method of hair treatment to give ease of wet and dry combing which comprises the step of applying a cosmetic which contains at least one copolymeric, quaternary ammonium salt which is soluble or forms a microemulsion in an aqueous surfactant system, which has a molecular weight distribution of 10^4 to 10^9, the molecular weight of at least 5 percent by weight of the copolymer being 10^7 and 10^9, and comprises, in any order, recurring structural elements of the formulae



in which A_1, A_2, A_3 and A_4 are each hydrogen or methyl, G_1 and G_2 differ from one another and are each —CN, —COOH or



D_1 and D_2 are each oxygen or —NH—, E_1 and E_2 are each alkylene having 1 to 4 carbon atoms which is unsubstituted or substituted by hydroxyl, R_1, R_2, R_3 and R_4 are each methyl or ethyl, Q is alkyl or hydroxyalkyl having 1 to 4 carbon atoms or benzyl and $X^{\ominus}$ is the radical of at least one anionic sulfonate surfactant.

4,460,571

COSMETIC COMPOSITION

Dominador S. Gomez, 623 Chesapeake Dr., Bolingbrook, Ill. 60439

Filed Mar. 29, 1982, Ser. No. 363,038

Int. Cl.³ A61K *7/06, 7/09, 7/11, 47/00*

U.S. Cl. 424—71 **6 Claims**

1. A homogeneous non-flammable fluid composition consisting essentially of the following ingredients in their respective amounts:

Ingredient	Parts by Weight
cow's milk solids	15–30
water	140–180
ethanol	15–35
pharmacologically safe volatile fragrance	0.1–1.0

wherein said milk solids constitute between 5% and 15% by weight of the composition, said composition being useful in providing a bonding effect to human hair and a cooling and antiseptic effect to human skin, and being resistant to microbial degradation for at least a year at ambient room temperatures, said composition having been made under conditions wherein, at the instant of admixture of the ingredients, the composition contains at least 20% water to avoid formation of an irreversible precipitate.

4,460,572

SYNTHETIC RESINOUS POLYMER CONTAINING BIOLOGICALLY ACTIVE ORGANIC MATERIAL

Robert L. Derby, Lake Jackson, Tex.; Richard H. Hall, and Howard L. Young, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 392,119, Jun. 25, 1982, abandoned, which is a continuation-in-part of Ser. No. 259,864, May 4, 1981, abandoned, which is a continuation-in-part of Ser. No. 150,376, May 15, 1980, abandoned. This application May 13, 1983, Ser. No. 494,197

Int. Cl.³ A61K *31/74;* A01N *31/02, 31/035*

U.S. Cl. 424—78 18 Claims

1. A fumigant composition, the fumigant composition comprising a plurality of fumigant swellable fumigant insoluble crosslinked polymer particles, the polymer particles having a swelling index of from about 1.5 to 50, the polymer particles having imbibed therein from about 3 to 50 times the unswollen volume of the particles of a volatile soil fumigant which boils at atmospheric pressure at a temperature of from about −100° centigrade to 350° C.

2. The fumigant composition of claim 1 wherein the fumigant comprises 1,3-dichloropropene.

3. The fumigant composition of claim 1 wherein the polymer particles are crosslinked polystyrene.

4,460,573

METHODS OF STABILIZING THIMEROSAL IN PRESENCE OF POLYVINYLPYRROLIDONE

Stanley W. Huth, Newport Beach, and Hali G. Wagner, Norco, both of Calif., assignors to Allergan Pharmaceuticals, Inc., Irvine, Calif.

Filed Jun. 22, 1983, Ser. No. 506,579

Int. Cl.³ A61K *31/79, 31/305;* A01N *55/06*

U.S. Cl. 424—80 6 Claims

1. A process for manufacturing a solution containing the combination of polyvinylpyrrolidone and thimerosal which comprises heating an aqueous solution of polyvinylpyrrolidone to a temperature of about 85° C. to about 121° C., cooling said polyvinylpyrrolidone solution and adding an antibacterial or antifungal amount of thimerosal to said cooled polyvinylpyrrolidone.

4,460,574

PROPHYLAXIS OR TREATMENT OF INTERFERON-SENSITIVE DISEASES

Alexander A. Yasbrov, 45 Wiggins St., Princeton, N.J. 08540

Filed Jun. 16, 1980, Ser. No. 159,540

Int. Cl.³ A61K *45/02*

U.S. Cl. 424—85 13 Claims

1. In a method of administration for prophylaxis or treatment of interferon-sensitive diseases in a human with human interferon, the improvement which comprises the rectal or urogenital administration of a therapeutically effective amount of a liquid pharmaceutical composition comprising native human interferon which has an activity of at least about 5000 international units per ml for Type I interferon or at least about 1000 international units per ml for Type II interferon, said liquid pharmaceutical composition not being clinically appropriate for intramuscular or intravenous injection.

4,460,575

VACCINAL COMPLEX CONTAINING A SPECIFIC ANTIGEN AND VACCINE CONTAINING IT

Lucien D. d'Hinterland; Gérard Normier; Anne-Marie Pinel, and Jacques Durand, all of Castres, France, assignors to Pierre Fabre S.A., France

Filed Feb. 20, 1981, Ser. No. 236,534

Claims priority, application France, Feb. 20, 1980, 80 03707

Int. Cl.³ A61K *39/02, 39/09;* C07C *103/52;* C07H *21/02*

U.S. Cl. 424—92 14 Claims

1. A vaccinal complex comprising RNA selected from bacterial ribosomal RNA and fragments of bacterial ribosomal RNA, on which are coupled from 1 to 5% by weight of a specific antigen of bacterial serotype.

13. A vaccine against pathogenic bacteria comprising a pharmaceutically acceptable support and an effective amount of the vaccinal complex of claim 1 to inoculate a patient.

4,460,576

PEPTIDE AND HORMONE AGENT CONTAINING THE SAME AS EFFECTIVE INGREDIENT

Hiroshi Kawauchi, Iwate, Japan, assignor to Kaken Pharmaceutical Co., Ltd., Tokyo and Suntory Limited, Osaka, both of, Japan

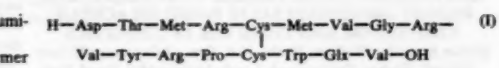
Filed Feb. 3, 1983, Ser. No. 463,604

Claims priority, application Japan, Feb. 3, 1982, 57-16691

Int. Cl.³ C07C *103/52;* A61K *37/02*

U.S. Cl. 424—177 6 Claims

1. A peptide or the salt thereof having the structural formula (I):



(I)

wherein Glx is Glu or Gln, and the following physical properties:

(1) Ultraviolet Absorption Spectrum: Max 280 nm.,

(2) Ehrlich reaction, Sakaguchi reaction and Pauly's reaction: positive,

(3) Basic,

(4) Soluble in water, methanol and acetic acid, slightly soluble in ethyl acetate, butyl acetate, ethyl ether, hexane, petroleum ether, benzene and chloroform, and

(5) white powder.

4,460,577

PHARMACEUTICAL COMPOSITIONS CONSISTING OR CONSISTING ESSENTIALLY OF LIPOSOMES, AND PROCESSES FOR MAKING SAME

Luigi Moro, Cairate; Guido Neri, and Alessandro Rigamonti, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 945,515, Sep. 25, 1978, abandoned. This application Jan. 14, 1980, Ser. No. 111,837

Claims priority, application Italy, Sep. 30, 1977, 28147 A/77; Jan. 19, 1979, 19434 A/79

Int. Cl.³ A61K *31/70, 31/74, 31/505*

U.S. Cl. 424—180 12 Claims

1. A method for removing a non-entrapped drug from a liposomic suspension, comprising:

(a) contacting said suspension with an ion-exchange resin capable of selectively binding said non-entrapped drug by mixing said suspension with said resin; and

(b) separating said resin-bound drug from said suspension by passing said mixture through a filter medium capable of retaining said resin and filtrating said suspension.

4,460,578

PHARMACEUTICAL COMPOSITION FOR TOPICAL USE BASED ON A TOTAL EXTRACT OF *HEDYSARUM FRUCTESCENS WILLD*

Claude M. H. Cervelle, 165, boulevard Haussmann, 75008 Paris, France, and Madeleine Cervelle, Paris, France, assignors to Claude Marie Henri Cervelle, Paris, France

Filed Dec. 11, 1981, Ser. No. 329,863

Claims priority, application France, Dec. 11, 1980, 80 26342

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195 19 Claims

1. A pharmaceutical composition comprising:

a pharmaceutically acceptable vehicle for topical administration; and

an effective amount of *Hedysarum Fructescens Willd* plant extract consisting essentially of flavonoids, catechic tannins and phenols-acids, and substantially free of alkaloids;
wherein said extract is obtained by:
extracting the dry plant with an effective amount of 30–95% alcohol to obtain a hydro-alcoholic extract;
reducing the volume of said hydro-alcoholic extract; and
drying said extract.

13. A method of treating a herpes, zona and varicella virus infection of the skin of a patient which comprises topically applying to the skin of the diseased region the pharmaceutical composition of claim **1** in an amount sufficient to reduce said infection.

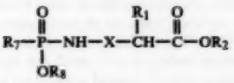
4,460,579

THIAZINE AND THIAZEPINE CONTAINING COMPOUNDS

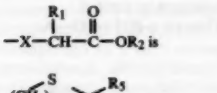
Donald S. Karanewsky, East Windsor, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 28, 1983, Ser. No. 470,882
Int. Cl.[3] **A61K** *31/675;* **C07D** *279/06, 281/04, 281/10*
U.S. Cl. 424—200 **18 Claims**

1. A compound of the formula



and pharmaceutically acceptable salts thereof wherein:



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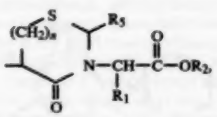
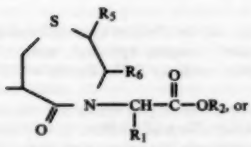
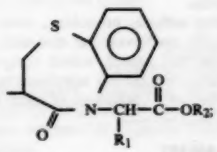
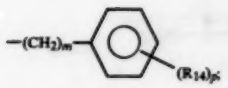


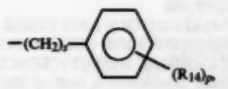




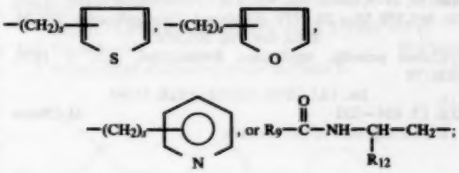
R_1 is hydrogen, lower alkyl, amino substituted lower alkyl, hydroxy substituted lower alkyl, or halo substituted lower alkyl;
n is one or two;
R_5 and R_6 are independently selected from the group consisting of hydrogen, lower alkyl, $-(CH_2)_m$-cycloalkyl wherein said cycloalkyl is a saturated ring of 3 to 7 carbons, and



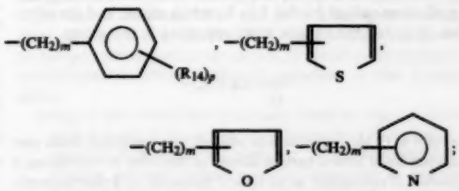
m is zero or an integer from 1 to 4;
R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, halo, trifluoromethyl, or hydroxy;
p is an integer from 1 to 3 provided that p is more than one only if R_{14} is hydrogen, methyl, methoxy, chloro, or fluoro;
R_7 is alkyl of 1 to 10 carbons,



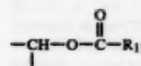
$-(CH_2)_r$-cycloalkyl wherein cycloalkyl is a saturated ring of 3 to 7 carbons, $-(CH_2)_r-NH_2$



s is zero or an integer from 1 to 7;
t is an integer from 1 to 8;
R_9 and R_{12} are independently selected from the group consisting of lower alkyl, halo substituted lower alkyl-$(CH_2)_m$-cycloalkyl wherein cycloalkyl is a saturated ring of 3 to 7 carbons,

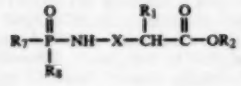


R_8 and R_2 are independently selected from the group consisting of hydrogen, lower alkyl, benzhydryl, an alkali metal ion, an alkaline earth metal ion, and

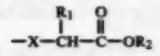


R_{10} is hydrogen, lower alkyl, cycloalkyl wherein cycloalkyl is a saturated ring of 3 to 7 carbons or phenyl; and
R_{11} is hydrogen, lower alkyl, lower alkoxy, cycloalkyl wherein cycloalkyl is a saturated ring of 3 to 7 carbons, phenyl, benzyl, or phenethyl.

17. A composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and a hypotensively effective amount of a hypotensive agent or pharmaceutically acceptable salt thereof of the formula



wherein R_7, R_8 and



are as defined in claim 1.

4,460,580

N-ALKYLATED AMINOALCOHOLS AND THEIR PHARMACEUTICAL COMPOSITIONS USEFUL FOR THE TREATMENT OF CARDIAC INSUFFICIENCY

Franz Ostermayer, and Markus Zimmermann, both of Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

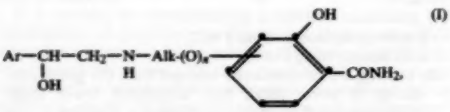
Continuation-in-part of Ser. No. 316,263, Oct. 29, 1981, abandoned, which is a continuation-in-part of Ser. No. 095,688, Nov. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 041,570, May 23, 1979, abandoned. This application Jun. 24, 1982, Ser. No. 391,814

Claims priority, application Switzerland, Jun. 5, 1978, 6136/78

Int. Cl.³ C07D *213/56;* **A61K** *31/44*

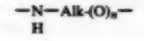
U.S. Cl. 424—232 **41 Claims**

1. A compound of the formula



(I)

in which Ar is phenyl or pyridyl unsubstituted or substituted by 1 or 2 hydroxyl groups, n has the values 0 or 1 and Alk is an alkylene radical having 2 to 5 carbon atoms, and the nitrogen atom and the oxygen atom appearing in the group



or, if n is 0, the salicylamide radical, are separated from one another by at least 2 carbon atoms, in the form of racemates, a mixture of racemates, or an optical antipode, or a pharmaceutically acceptable non-toxic acid addition salt thereof.

41. A method for the treatment of cardiac insufficiency in a warm-blooded animal which comprises administering a therapeutically effective amount of a compound of the formula I defined in claim 1 to an animal in need thereof.

4,460,581

(1-HYDROXY-2-AMINO-ALKYL)-SUBSTITUTED BENZOXAZINONES AND BENZOXAZOLINONES

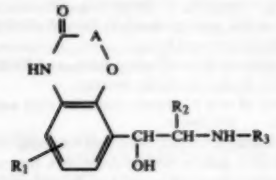
Kurt Schromm, Ingelheim am Rhein; Anton Mentrup, Mainz-Kastel; Ernst-Otto Renth, Ingelheim am Rhein, and Armin Fügner, Gau-Algesheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Oct. 12, 1982, Ser. No. 433,681

Int. Cl.³ A61K *31/47;* **C07D** *265/36*

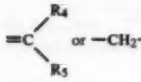
U.S. Cl. 424—244 **6 Claims**

1. A compound of the formula



wherein

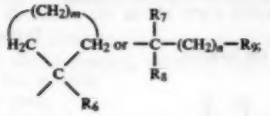
A is a single bond,



R_1 is —OH, —O—acyl or chlorine;

R_2 is hydrogen, methyl or ethyl;

R_3 is



m is 2,3 or 4;

n is 1,2 or 3;

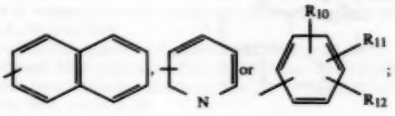
R_4 is hydrogen or lower alkyl;

R_5 is hydrogen, lower alkyl or, when R_4 is hydrogen, also phenyl;

R_6, R_7 and R_8 are each hydrogen or methyl;

R_9 is hydrogen, —Ar, —OAr or —NH—CO—Ar;

Ar is



R_{10}, R_{11} and R_{12} which may be identical to or different from each other, are each hydrogen, hydroxyl, methyl, methoxy, halogen, methylenedioxy-,NH—R_{13} or —$CONH_2$ and

R_{13} is hydrogen, acyl or lower alkylsulfonyl; or a non-toxic, pharmaceutically acceptable acid addition salt thereof, in the form of their racemates, enantiomers or diastereoisomeric pairs of enantiomers.

6. The method of treating asthma, bronchitis, urticaria, conjunctivites, hay fever, colds, cardiovascular disorders and uterine spasma in a warm-blooded animal, which comprises perorally, parenterally, rectally or topically administering to said animal an effective amount of a compound of claim 1.

4,460,582

3-CARBOXYBENZYL CEPHEMS

John H. C. Nayler, Dorking, England, assignor to Beecham Group P.L.C., England

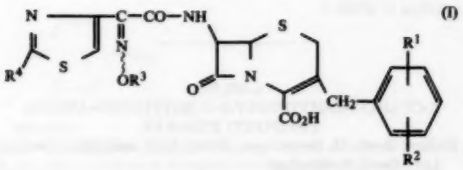
Filed Mar. 1, 1982, Ser. No. 353,025

Claims priority, application United Kingdom, Mar. 5, 1981, 8106891

Int. Cl.³ A61K *31/545;* **C07D** *501/24*

U.S. Cl. 424—246 **24 Claims**

1. A compound of the formula (I):



(I)

a pharmaceutically acceptable salt thereof or in-vivo hydrolyzable ester of any carboxy group, wherein R^1 is carboxy, R^2 is hydrogen or carboxy, R^3 is hydrogen, alkanoyl of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms, benzoyl, naphthoyl, phenylalkanoyl of 1 to 6 carbon atoms in the alkyl moiety, phenylalkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, alkanesulphonyl of 1 to 6 carbon atoms, benzenesulphonyl, toluenesulphonyl, alkylcarbamoyl of 1 to 6 carbon atoms, phenylcarbamoyl, phenylalkylcarbamoyl of 1 to 6 carbon atoms in the alkyl moiety, alkanoylcarbamoyl of 1 to 6 carbon atoms and dialkoxy-P(=O)O— wherein each alkoxy moiety has from 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms or said alkanoyl of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms, benzoyl, naphthoyl, phenylalkanoyl of 1 to 6 carbon atoms in the alkyl moiety, phenylalkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, alkanesulphonyl of 1 to 6 carbon atoms, benzenesulphonyl, toluenesulphonyl, alkylcarbamoyl of 1 to 6 carbon atoms, phenylcarbamoyl, phenylalkylcarbamoyl of 1 to 6 carbon atoms in the alkyl moiety, alkanoylcarbamoyl of 1 to 6 carbon atoms and dialkoxy-P-(=O)O— wherein each alkoxy moiety has from 1 to 6 carbon atoms, alkyl or alkenyl substituted by chloro, bromo, fluoro, hydroxy, carboxy, alkoxy of 1 to 6 carbon atoms, phenyl, naphthyl, thienyl, pyridyl, pyrrolyl, indolyl or furyl, or said alkanoyl of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms, benzoyl, naphthoyl, phenylalkanoyl of 1 to 6 carbon atoms in the alkyl moiety, phenylalkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, alkanesulphonyl of 1 to 6 carbon atoms, benzenesulphonyl, toluenesulphonyl, alkylcarbamoyl of 1 to 6 carbon atoms, phenylcarbamoyl, phenylalkylcarbamoyl of 1 to 6 carbon atoms in the alkyl moiety, alkanoylcarbamoyl of 1 to 6 carbon atoms and dialkoxy-P(=O)O— wherein each alkoxy moiety has from 1 to 6 carbon atoms substituted by alkyl of 1 to 6 carbon atoms, or said alkyl being substituted by alkanoyl of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms, benzoyl, naphthoyl, phenylalkanoyl of 1 to 6 carbon atoms in the alkyl moiety, phenylalkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, alkanesulphonyl of 1 to 6 carbon atoms, benzenesulphonyl, toluenesulphonyl, alkylcarbamoyl of 1 to 6 carbon atoms, phenylcarbamoyl, phenylalkylcarbamoyl of 1 to 6 carbon atoms in the alkyl moiety, alkanoylcarbamoyl of 1 to 6 carbon atoms and dialkoxy-P(=O)O— wherein each alkoxy moiety has from 1 to 6 carbon atoms, and R^4 is an amino or protected amino group.

4,460,583

CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Hisashi Takasugi, Kohamanishi; Kiyoshi Tsuji, Osaka, and Toshiyuki Chiba, Nara, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

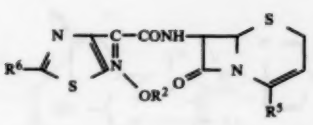
Division of Ser. No. 886,340, Mar. 14, 1978, and Ser. No. 302,668, Sep. 15, 1981, Pat. No. 4,427,674. This application Sep. 30, 1982, Ser. No. 428,664

Claims priority, application United Kingdom, Mar. 14, 1977, 10699/77; Jul. 12, 1977, 29245/77; Oct. 11, 1977, 42315/77; Jan. 3, 1978, 75/78

Int. Cl.³ A61K *31/545;* **C07D** *501/20*

U.S. Cl. 424—246 **28 Claims**

1. A syn compound of the formula:



wherein

R^2 is an aliphatic hydrocarbon residue substituted with halogen, carboxy or esterified carboxy, or cycloalkyl;

R^5 is carboxy or functionally modified carboxy and R^6 is amino or protected amino, and pharmaceutically acceptable salt thereof.

4,460,584

NITROGEN HETEROCYCLES

Derrick F. Jones, and Keith Oldham, both of Cheshire, England, assignors to Imperial Chemical Industries PLC, London, England

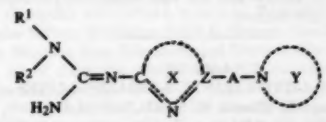
Filed Mar. 9, 1982, Ser. No. 356,503

Claims priority, application United Kingdom, Mar. 13, 1981, 8108048

Int. Cl.³ C07D *401/12, 403/12;* **A61K** *31/505, 31/44*

U.S. Cl. 424—249 **10 Claims**

1. A guanidine derivative of the formula I:



I

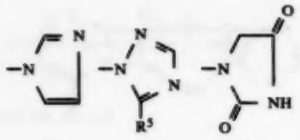
in which R^1 and R^2, which may be the same or different, are hydrogen or branched or unbranched 1-10C alkyl, 3-C cycloalkyl or 4-14 C cycloalkylalkyls, each alkyl, cycloalkyl or cycloalkylalkyl being optionally substituted by one or more halogens selected from fluorine, chlorine and bromine, provided that at least one of R^1 and R^2 is a halogensubstituted alkyl, cycloalkyl or cycloalkylalkyl, and provided that there is no halogen substituent on the carbon of the alkyl, cycloalkyl or cycloalkylalkyl which is directly attached to the nitrogen atom;

in ring X the dotted line is a double bond on one side of the nitrogen and Z is carbon or nitrogen such that ring X is selected from pyrazine, pyridine, pyrimidine and 1,3,5-triazine and may, where possible, carry one or two optional substituents, the optional substituents on ring X being selected from fluorine, chlorine, bromine, 1-6C alkyl, 1-6C alkoxy, 1-6C alkylthio, trifluoromethyl, hydroxy and amino;

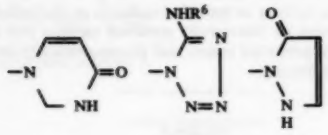
-A- is a 1-8C alkylene chain which is optionally substituted by one or two 1-3C alkyls and into which is optionally inserted, as part of the backbone of the chain, an NH or a 1-6C N-alkyl or one or two groups selected from oxygen, sulphur, cis and trans vinylene, ethynylene, phenylene and 5-7C cycloalkylene, provided that no two insertions selected from oxygen, sulphur, NH and N-alkyl are directly attached one to the other and provided that when the optional insertion is made in chain A which results in the inserted group being directly attached to ring Y the inserted group is other than oxygen, sulphur, NH or N-alkyl,

or -A- is 5-7C cycloalkylene or phenylene;

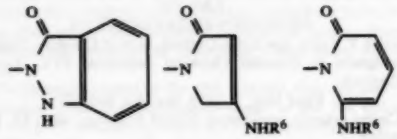
ring system Y is of the formula IV, V, VI, VII, VIII, IX, X, XI or XII:



IV V VI



VII VIII IX



X XI XII

in which R^5 is hydrogen or of the formula NHR^6 in which R^6 is hydrogen or methyl and the pharmaceutically-acceptable acid-addition salts thereof.

4,460,585

1-ARYL-4-HYDRAZINYL-S-TRIAZIN-2-ONES

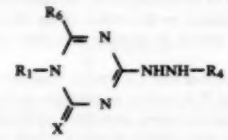
Henry F. Campbell; Thomas H. Scholz, both of Lansdale, and George H. Douglas, Malvern, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 280,816, Jul. 6, 1981, abandoned. This application Jan. 17, 1983, Ser. No. 458,451

Int. Cl.[3] **C07D** *251/16, 251/42;* **A61K** *31/53*

U.S. Cl. 424—249 **8 Claims**

1. A compound of the formula



wherein:

X is oxygen or sulfur;

R_1 is phenyl, substituted phenyl, phenyl lower alkyl, or substituted phenyl lower alkyl;

R_4 is hydrogen, lower alkyl, lower alkanoyl, carboloweralkoxy, phenyl, or benzoyl;

R_6 is hydrogen or lower alkyl; and wherein:

substituted phenyl or substituted phenyl lower alkyl means a phenyl group or a phenyl lower alkyl group, respectively, in which one or more of the phenyl hydrogens has been replaced by the same or different substituents selected from the group consisting of halo, lower alkyl, halo lower alkyl, amino, lower alkanoyl, lower alkyl acylamino, hydroxy, carboloweralkoxy, phenyl lower alkoxy, lower alkyl acyloxy, cyano, halo lower alkoxy or lower alkyl sulfonyl;

and the pharmaceutically acceptable acid addition salts thereof.

8. A method of lowering blood pressure in humans and other animals, comprising administering thereto an effective blood pressure lowering amount of a compound of the formula according to claim 1.

4,460,586

2-CYANO-4-(2-HYDROXY-3-SUBSTITUTED-AMINO-PROPOXY) INDOLES

Richard Berthold, Bottmingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

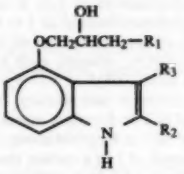
Filed Jan. 11, 1982, Ser. No. 338,592

Claims priority, application Switzerland, Jan. 16, 1981, 275/81; Jan. 26, 1981, 475/81; Feb. 9, 1981, 846/81; Feb. 9, 1981, 849/81; Feb. 9, 1981, 852/81

Int. Cl.[3] **C07D** *403/12, 401/12, 209/30;* **A61K** *31/495, 31/475*

U.S. Cl. 424—250 **11 Claims**

1. A compound of formula I

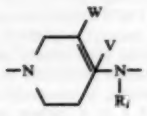


I

wherein either

(A) R_1 is:

(a) a group —B—CO—R_h, wherein B is a group (i), (ii) or (iii), groups (i), (ii) and (iii) having the following significances:

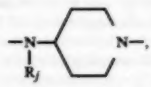


(i)

wherein

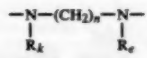
V and W are hydrogen or together form an additional bond,

R_i is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or phenyl monosubstituted or independently disubstituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen of atomic number of from 9 to 35;



(ii)

wherein R_j is hydrogen or alkyl of 1 to 4 carbon atoms;



(iii)

wherein

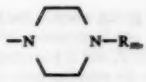
n is 2, 3 or 4,

R_k has the significance indicated above for R_j and

R_e has the significance indicated above for R_i, and

R_h is phenylalkyl of 7 to 11 carbon atoms or diphenylalkyl of 13 to 17 carbon atoms, any of the phenyl rings of these two radicals optionally being monoor independently disubstituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen of atomic number of from 9 to 35;

(b) a group



wherein

R_m is —COR_n or —R_p, wherein

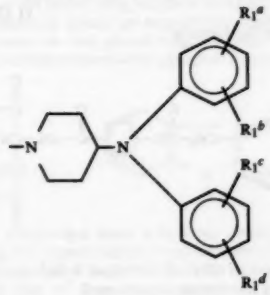
R_n has the significance indicated above for R_k and

R_p has the significance indicated above for R_k or is phenyl independently disubstituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen of atomic number of from 9 to 35,

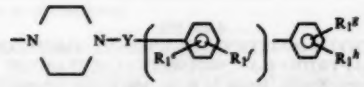
R_2 is hydroxy and

R_3 is hydrogen or

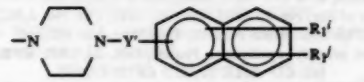
(B) R_1 is a group (i'), (ii') or (iii'), groups (i'), (ii') and (iii') having the following significances:



(i')



(ii')



(iii')

wherein

Y and Y' are a bond or methylene, and

R_1^a to R_1^j are hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen of atomic number of from 9 to 35,

R_2 is hydrogen, methyl, hydroxymethyl, carboxyl, alkoxycarbonyl of 2 to 5 carbon atoms, carbamoyl or cyano and

R_3 is hydrogen or methyl,

and physiologically acceptable hydrolyzable derivatives thereof having the hydroxy group in the 2 position of the 3-aminopropoxy side chain in esterified form, or a pharmaceutically acceptable salt form thereof.

4,460,587

5-DIAZACYCLOALKYL IMIDAZO[1,2-C][1,3]BENZODIAZEPINES

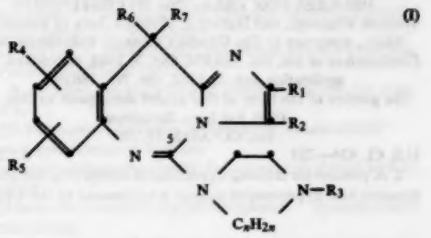
Isidoros Vlattas, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 328,274, Dec. 7, 1981, abandoned. This application Nov. 29, 1982, Ser. No. 444,957

Int. Cl.³ A61K *31/415*; C07D *487/04*

U.S. Cl. 424—250 **11 Claims**

1. A compound of the formula



(I)

wherein each of R_1 and R_2 are hydrogen, lower alkyl, cyano, carboxy, lower alkoxycarbonyl or carbamoyl; n represents the integer 2; R_3 is hydrogen, lower alkyl, lower alkoxycarbonyl or hydroxy lower alkyl of 2 to 4 carbon atoms; R_4 represents hydrogen, lower alkyl, lower alkoxy, lower alkylthio, halogen or trifluoromethyl; R_5 represents hydrogen; and R_6 and R_7 represent hydrogen or lower alkyl; an N-oxide; or a pharmaceutically acceptable salt thereof.

9. A psychoactive and antiallergic pharmaceutical composition comprising an effective amount of a pharmacologically active compound as claimed in claim 1 in combination with one or more pharmaceutical carriers.

4,460,588

5-SUBSTITUTED PYRIMIDINE DERIVATIVES ACTIVE AGAINST INTERNAL ANIMAL PARASITES

Alexander Serban, Doncaster; Keith G. Watson, Box Hill North; Colin Wilshire, East Doncaster, and Bruce A. Forsyth, Croydon, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

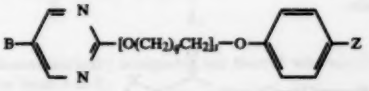
Filed Feb. 5, 1980, Ser. No. 119,006

Claims priority, application Australia, Feb. 16, 1979, PD7721; Aug. 29, 1979, PE0244; Sep. 27, 1979, PE0672

Int. Cl.³ A61K *31/505*; C07D *239/34*

U.S. Cl. 424—251 **16 Claims**

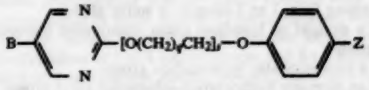
1. A compound or a pharmaceutically acceptable salt thereof of the formula



wherein B is halogen or trifluoromethyl, Z is isothiocyano or NHR^7

wherein R^7 is hydrogen or acetyl, s is an integer from 1 to 2, q is an integer from 1 to 3, with the proviso that when s is 2, q is 1.

6. A process for killing internal parasites of warm-blooded animals which process comprises treating the infected animal with an effective amount of a composition comprising as active ingredient a compound or pharmaceutically acceptable salt thereof of the formula:



wherein B is halogen or trifluoromethyl, Z is isothiocyano or NHR^7

wherein R^7 is hydrogen or acetyl, s is an integer from 0 to 2, q is an integer from 1 to 3, with the proviso that when s is 2, q is 1.

4,460,589

PROCESS FOR TREATING HYPERTENSION

Wendell Wierenga, and Harvey I. Skulnick, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

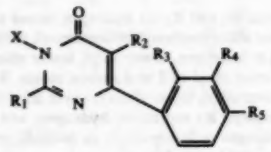
Continuation of Ser. No. 193,574, Oct. 3, 1980, abandoned. This application Jun. 9, 1982, Ser. No. 386,846

The portion of the term of this patent subsequent to Dec. 29, 1998, has been disclaimed.

Int. Cl.³ A61K *31/505*

U.S. Cl. 424—251 4 Claims

1. A process for treating hypertension comprising the administration to a hypertensive subject a compound of the formula



wherein X is alkyl of from 1 to 3 carbon atoms, inclusive, or alkenyl of from 3 to 5 carbon atoms, inclusive,

R_1 is —NH_2,

R_2 is chloro, bromo or iodo,

R_3 is hydrogen or fluorine,

R_4 is hydrogen or fluorine, and

R_5 is hydrogen, fluorine or CH_3; or a salt thereof; in association with a pharmaceutical carrier.

4,460,590

DIGLYCIDYL SUBSTITUTED HETEROCYCLIC COMPOUNDS

Hinrich Möller, Monheim, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

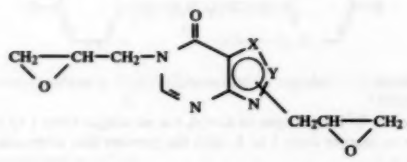
Filed Jun. 23, 1982, Ser. No. 391,476

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131365

Int. Cl.³ A61K *31/505*; C07D *487/04*

U.S. Cl. 424—251 27 Claims

1. A diglycidyl-substituted heterocyclic compound of the formula:



wherein the glycidyl group in the five-membered ring is attached to a ring nitrogen atom, and wherein X and Y are the same or different and are either nitrogen or the radical C-R, with R being hydrogen or a group containing from 1 to 12 carbon atoms selected from the following:

(a) a straight or branched chain alkyl group optionally containing from 1 to 3 oxygen or sulfur atoms;

(b) a straight or branched chain unsaturated hydrocarbon group;

(c) a cycloaliphatic hydrocarbon group;

(d) an aromatic hydrocarbon-substituted alkyl group;

(e) an aromatic hydrocarbon group;

(f) a heterocyclic group containing at least one heteroatom selected from the group consisting of O, N, P, and S, provided that when the heteroatom is nitrogen, the nitrogen atom is free of hydrogen atoms;

(g) a cycloaliphatic hydrocarbon-substituted alkyl group; and

(h) a heterocyclic-substituted alkyl group wherein the heterocyclic moiety contains at least one heteroatom selected from the group consisting of O, N, P, and S, provided that when the heteroatom is nitrogen, the nitrogen atom is free of hydrogen atoms;

and wherein when R contains an aromatic, cycloaliphatic or heterocyclic moiety, such moiety may be unsubstituted or may be substituted with from 1 to 3 straight or branched chain alkyl, alkenyl, or alkynyl radicals.

4,460,591

8,10-DIDEAZAMINOPTERINS

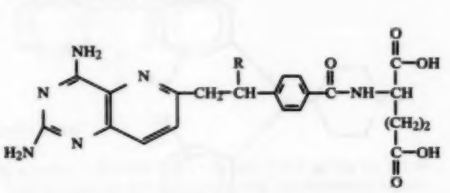
Joseph I. DeGraw, Sunnyvale, Calif.; Lawrence F. Kelly, Canberra, Australia, and Francis M. Sirotnak, New York, N.Y., assignors to SRI International, Menlo Park, Calif.

Filed Aug. 26, 1982, Ser. No. 411,658

Int. Cl.³ C07D *471/04*, *487/04*; A61K *31/505*

U.S. Cl. 424—251 11 Claims

1. A compound of the formula



where R is a hydrogen or alkyl of 1 to about 8 carbon atoms, and pharmaceutically acceptable salts thereof.

4,460,592

6-METHYL-2-(4-METHYLTHIOPHENYL)-IMIDAZO[1,2-a]-PYRIDINE-3-N,N-DIMETHYLACETAMIDE

Jean-Pierre Kaplan, Bourg la Reine, and Pascal George, Vitry sur Seine, both of France, assignors to Synthelabo

Division of Ser. No. 313,601, Oct. 21, 1981, Pat. No. 4,382,938. This application Feb. 10, 1983, Ser. No. 465,605

Claims priority, application France, Oct. 22, 1980, 80 22537

Int. Cl.³ A61K *31/435*; C07D *171/04*

U.S. Cl. 424—256 4 Claims

1. 6-Methyl-2-(4-methylthiophenyl)-imidazo[1,2-a]-pyridine-3-N,N-dimethylacetamide or a pharmaceutically acceptable salt thereof.

3. A method of providing a patient with a hypnotic effect which comprises administering to said patient a hynotically effective amount of the compound 6-methyl-2-(4-methylthiophenyl)-imidazo[1,2-a]-pyridine-3-N,N-dimethylacetamide or a pharmaceutically acceptable salt thereof.

4,460,593

CARBOSTYRIL DERIVATIVES, AND CENTRAL NERVOUS SYSTEM CONTROLLING AGENTS CONTAINING THE CARBOSTYRIL DERIVATIVES

Kazuo Banno; Takafumi Fujioka; Masaaki Osaki, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Japan

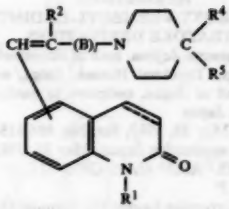
Division of Ser. No. 240,306, Mar. 4, 1981. This application Apr. 7, 1982, Ser. No. 366,337

Claims priority, application Japan, Mar. 6, 1980, 55-28805; Aug. 20, 1980, 55-115022

Int. Cl.³ C07D *401/00*; A61K *31/445*, *31/47*

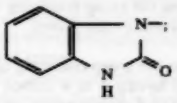
U.S. Cl. 424—258 8 Claims

1. A carbostyril derivative or a pharmaceutically acceptable salt thereof, wherein said carbostyril derivative is represented by the formula (1),



(I)

wherein R1 is a hydrogen atom; R2 is a hydrogen atom; B is a C_{1-6} alkylene group; l is 0 or 1; R^4 is an unsubstituted or substituted-phenyl group having 1 to 3 substituents, on the phenyl ring, selected from the group consisting of a halogen atom, a C_{1-6} alkyl group and a C_{1-6} alkoxy group; or R4 is a substituted-phenyl group having a C_{1-6} alkylenedioxy group as the substituent on the phenyl ring, wherein the two oxygen atoms of said alkylenedioxy group are respectively bonded to adjacent carbon atoms on said phenyl ring, a phenyl C_{1-6} alkyl group, a 1,2,3,4-tetrahydronaphthyl group or a group of the formula



R^5 is a hydrogen atom, a hydroxy group or a C_{1-6} alkanoyl group; the carbon-carbon bond between the 3- and 4-positions in the piperidine ring of formula (I) may be a double bond, in which case R^5 does not exist; and the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton is a single or double bond.

4,460,594

BICYCLO-HETERO-ALKYLENE-1-PIPERIDINES, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHODS OF USE THEREOF

Roger E. Markwell, Great Dunmow, England, assignor to Beecham Group p.l.c., England

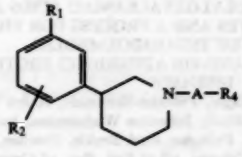
Filed Sep. 15, 1982, Ser. No. 418,267

Claims priority, application United Kingdom, Sep. 17, 1981, 8128090; Sep. 17, 1981, 8128091

Int. Cl.³ A61K *31/445*; C07D *417/06*

U.S. Cl. 424—267 **21 Claims**

8. A pharamaceutical composition useful for the treatment of central nervous system disorders in mammals including humans which comprises a therapeutically effective amount of a compound of the formula (I), or a pharmaceutically acceptable salt thereof:



(I)

wherein:

R_1 is hydroxy, C_{1-4} alkoxy or a pharmaceutically acceptable in-vivo hydrolysable acyloxy group: wherein:

R_1 is hydroxy, C_{1-4} alkoxy or a pharmaceutically acceptable in-vivo hydrolysable acyloxy group:

R_2 is hydrogen, C_{1-4} alkyl, hydroxy, C_{1-4} alkoxy or a pharmaceutically acceptable in-vivo hydrolysable acyloxy group;

R_4 is benzofuryl, benzothienyl, indolyl, quinolyl, isoquinolyl,2,3-dihydrobenzofuryl, 2,3-dihydrobenzylthienyl or 2,3-dihydroindolyl optionally substituted by one or two substituents selected from C_{1-4} alkoxy, hydroxy, acyloxy, trifluoromethyl, halogen or nitro; and

A is a bond or C_{1-6} alkylene, in combination of with a pharmaceutically acceptable carrier.

14. A composition according to claim 8 wherein the compound is:

3-{1-[(2,3-Dihydro-2-benzofuranyl)methyl]-3-piperidinyl} phenol hydrobromide hydrate,

3-[1-(2-bromo-3-benzofurylmethyl)-3-piperidyl] phenol hydrobromide,

3-[1-(3-benzofurylmethyl)-3-piperidyl]phenol hydrobromide hemihydrate,

3-(1-[2-(2-benzofuryl)ethyl]-3-piperidyl)phenol hydrobromide hemihydrate,

3-[1-(2-benzofurylmethyl)-3-piperidyl]phenol hydrobromide, or

3-(1-[2-(1H-3-indolyl)ethyl]-3-piperidyl) phenol dihydrobromide, or a corresponding free base.

4,460,595

USING URAZOLE ANALOGS OF PROSTAGLANDINS FOR BRONCHODILATION

David R. Adams, Epping, and Alexander C. Goudie, Harlow, both of England, assignors to Beecham Group Limited, England

Continuation of Ser. No. 858,554, Dec. 8, 1977, Pat. No. 4,367,338. This application Apr. 23, 1982, Ser. No. 371,128

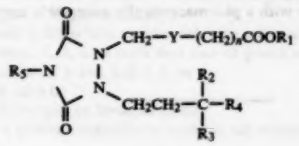
Claims priority, application United Kingdom, Dec. 18, 1976, 52956/76; Oct. 19, 1977, 43407/77

The portion of the term of this patent subsequent to Jan. 4, 2000, has been disclaimed.

Int. Cl.³ A61K *31/41*

U.S. Cl. 424—269 **16 Claims**

1. A pharmaceutical composition useful for effecting bronchodilation in humans and animals which comprises a therapeutically effective amount of a compound of the formula:



or a pharmaceutically acceptable salt thereof wherein n has a value of from 1 to 5;

Y is $—CH_2CH_2—$ or —CH=CH—;

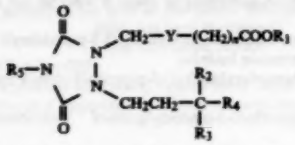
R_1 is hydrogen or alkyl of 1 to 6 carbon atoms;

R_2 when taken alone is hydrogen; alkyl of 1 to 4 carbon atoms; or phenyl;

R_3 is hydroxy;

R_4 when taken alone is hydrogen; alkyl of 1 to 9 carbon atoms; cycloalkyl of 3 to 8 carbon atoms; phenyl; naphthyl; or alkyl of 1 to 6 carbon atoms substituted with phenyl, naphthyl or cycloalkyl of 3 to 8 carbon atoms; any of said phenyl rings and said naphthyl rings being unsubstituted or substituted with halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, hydroxy, alkoxy of 1 to 6 carbon atoms, phenylalkoxy wherein alkoxy contains from 1 to 6 carbon atoms or nitro; R_2 and R_4 taken together, together with the carbon atom to which they are joined, are cycloalkylidene of 5 to 8 carbon atoms; and R_5 is hydrogen, alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 8 carbon atoms; phenyl, alkyl of 1 to 6 carbon atoms substituted with phenyl or cycloalkyl of 3 to 8 carbon atoms substituted with phenyl, said phenyl rings being unsubstituted or substituted with halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms or nitro, in combination with a pharmaceutically acceptable carrier.

9. A method of effecting bronchodilation in humans and animals which comprises administering to a human or animal in need thereof a therapeutically effective amount of a compound of the formula:



or a pharmaceutically acceptable salt thereof wherein

n has a value of from 1 to 5;

Y is $-CH_2CH_2-$ or $-CH=CH-$;

R_1 is hydrogen or alkyl of 1 to 6 carbon atoms;

R_2 when taken alone is hydrogen; alkyl of 1 to 4 carbon atoms; or phenyl;

R_3 is hydroxy;

R_4 when taken alone is hydrogen; alkyl of 1 to 9 carbon atoms; cycloalkyl of 3 to 8 carbon atoms; phenyl; naphthyl; or alkyl of 1 to 6 carbon atoms substituted with phenyl, naphthyl or cycloalkyl of 3 to 8 carbon atoms; any of said phenyl rings and said naphthyl rings being unsubstituted or substituted with halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, hydroxy, alkoxy of 1 to 6 carbon atoms, phenylalkoxy wherein alkoxy contains from 1 to 6 carbon atoms or nitro; R_2 and R_4 taken together, together with the carbon atom to which they are joined, are cycloalkylidene of 5 to 8 carbon atoms; and R_5 is hydrogen, alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 8 carbon atoms; phenyl, alkyl of 1 to 6 carbon atoms substituted with phenyl or cycloalkyl of 3 to 8 carbon atoms substituted with phenyl, said phenyl rings being unsubstituted or substituted with halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms or nitro, in combination with a pharmaceutically acceptable carrier.

4,460,596

THIENYLOXAZOLYLACETIC ACID DERIVATIVES AND PROCESS FOR PREPARING

Kazuo Matsumoto, Ibaraki, and Kohki Takashima, Tokyo, both of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

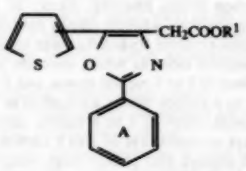
Filed Apr. 29, 1982, Ser. No. 372,990

Claims priority, application Japan, May 15, 1981, 56/73777

Int. Cl.³ C07D *263/32*; A61K *31/42*

U.S. Cl. 424—272 **17 Claims**

1. A compound of the formula:



wherein Ring A is phenyl or halogenophenyl and R^1 is hydrogen or lower alkyl.

4,460,597

HERBICIDAL 5-AMINOALKOXY-4-BENZOYL-1,3-DIMETHYLPYRAZOLE DERIVATIVES

Toshiaki Yanai; Terunomi Jojima, both of Hiromachi; Katsuhiko Kawakubo, Shiga; Toyokuni Honma, Shiga, and Masahiro Shindo, Shiga, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

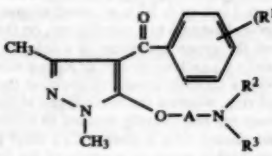
Filed May 23, 1983, Ser. No. 496,815

Claims priority, application Japan, May 25, 1982, 57-88542

Int. Cl.³ A01N *43/56*; C07D *231/20*

U.S. Cl. 424—273 P **6 Claims**

1. A pyrazole derivative having the formula (I):



(I)

wherein:

R^1 is selected from the group consisting of a methyl group, a halogen atom and a nitro group;

n is 2 or 3;

R^2 is selected from the group consisting of a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an alkenyl group having 3 or 4 carbon atoms, an alkylphenyl group having 1 or 2 carbon atoms in the alkyl portion and an alkylphenyl group having 1 or 2 carbon atoms in the alkyl portion and substituted with a C_1–C_4 alkyl group in the phenyl portion;

R^3 is selected from the group consisting of an alkyl group having 1 to 4 carbon atoms, an alkenyl group having 3 or 4 carbon atoms and a phenyl group; and

A is an alkylene group having from 1 to 5 carbon atoms.

4,460,598

TRIPHENYLIMIDAZOLYLOXYALKANOIC ACIDS AND THEIR DERIVATIVES AND A PROCESS FOR THE TREATMENT OF THROMBOEMBOLIC, INFLAMMATORY AND/OR ATHERIOSCLEROTIC DISEASES

Hans-Heiner Lautenschläger, Pulheim-Stommeln; André Welter, Pulheim; Gerd Hilboll; Johannes Winkelmann, both of Cologne; Gerrit Prop, Pulheim; Axel Brekle, Frechen, and Ottfried Zierenberg, Cologne, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GMBH, Cologne, Fed. Rep. of Germany

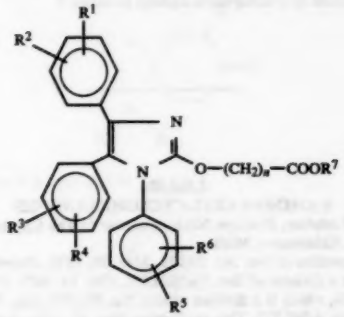
Filed Jul. 25, 1983, Ser. No. 516,938

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1982, 3228271

Int. Cl.³ C07D *233/70*; A61K *31/415*

U.S. Cl. 424—273 R **21 Claims**

1. ω-(1,4,5-Triphenylimidazol-2-yloxy)-alkanoic acids and their derivatives of the general formula I



wherein n is an integer from 1 to 10, R^1, R^2, R^3, R^4, R^5 and R^6, which are identical or different from each other, are members selected from the group consisting of hydrogen, the halogens, alkyl, alkoxy and trifluoromethyl, and one or several of the groupments R^1 and R^2, R^3 and R^4, and R^5 and R^6 together, a methylenedioxy group, and R^7 is a member selected from the group consisting of hydrogen, the alkali metal ions, the straight-chain and the branched alkyl group with 1 to 6 carbon atoms and the benzyl group.

21. Process for the treatment of thromboembolic, inflammatory and/or atherosclerotic diseases in humans by administering to humans suffering from such diseases a compound as claimed in claim 1 or claim 2 or in any of claims 3 to 20 once or several times per day in a dose amounting to from 1 to 1,000 mg per dose.

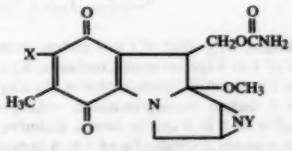
4,460,599

MITOMYCIN ANALOGS

William A. Remers, Tucson, Ariz., assignor to University Patents, Inc., Norwalk, Conn.

Division of Ser. No. 100,331, Dec. 5, 1979, Pat. No. 4,268,676. This application Nov. 13, 1980, Ser. No. 206,529
Int. Cl.³ A61K *31/40*
U.S. Cl. 424—274 4 Claims

1. A method for treatment of a neoplastic disease state in an animal wherein the compounds administered are compounds of the formula,



I

wherein: Y is hydrogen or lower alkyl; and X is a thiazolamino radical, a furfurylamino radical or a radical of the formula,

in which R, R^1, and R^2 are the same or different and selected from the group consisting of hydrogen and lower alkyl, and R^3 is selected from the group consisting of lower alkenyl, halo-lower alkenyl, lower alkynyl, lower alkoxycarbonyl, thienyl, formamyl, tetrahydrofuryl and benzene sulfonamide.

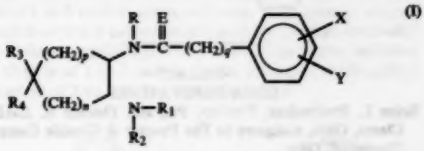
4,460,600

ADJACENTLY SUBSTITUTED KETAL DERIVATIVES OF CYCLOALKANE-AMIDE ANALGESICS

Lester J. Kaplan, Kalamazoo; Moses W. McMillan, Portage, and Jacob Szmuszkovicz, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 252,536, Apr. 9, 1981, Pat. No. 4,359,476. This application Nov. 4, 1982, Ser. No. 439,104
Int. Cl.³ A61K *31/40*; C07D *487/00*
U.S. Cl. 424—274 10 Claims

1. A compound of the formula



(I)

wherein

R is hydrogen or C_1 to C_3-alkyl;

R_1 and R_2, taken separately, are each hydrogen or C_1 to C_3-alkyl;

R_1 and R_2, taken together with the nitrogen to which they are bonded, are azetidinyl, pyrrolidinyl or piperidinyl;

R_3, taken separately, is hydrogen,

R_4, taken separately, is mercapto(—SH), —S(C_1 to C_3-alkyl), or R_3 is —GR_5 when R_4 is —GR_5;

R_5 is C_1 to C_2-alkyl;

each G is oxygen or bivalent sulfur, and both G moieties are the same in any one compound;

X and Y are independently selected from the group consisting of hydrogen, a halogen having an atomic number from 9 to 35, trifluoromethyl, nitro, methoxy, hydroxy, azido, C_1 to C_3-alkyl, phenyl, methanesulfonyl, cyano, amino, C_1 to C_3-alkoxycarbonyl, C_1 to C_3-alkanoyloxy, C_1 to C_3-carboxacylamino(—NHC(=O)R_6, wherein R_6 is halogen or C_1 to C_2-alkyl;

p and n are whole number integers selected from the group zero, 2, 3, or 4 such that one of p and n is zero and the other of p and n is 2, 3, or 4;

q is zero or 1;

E is oxygen or bivalent sulfur;

or a pharmaceutically acceptable salt thereof.

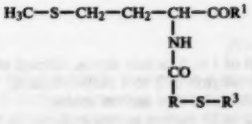
4,460,601

DIPEPTIDES HAVING A METHIONINE RESIDUE AND POSSESSING A PROTECTIVE ACTION FOR THE LIVER

Giampaolo Picciola; Franco Ravenna, both of Milan, and Mario Riva, Monza, all of Italy, assignors to Maggioni Farmaceutici, S.p.A., Milan, Italy

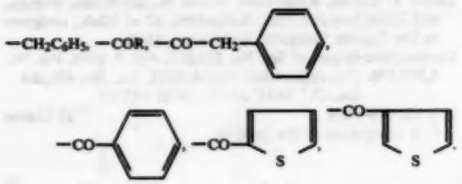
Filed Dec. 21, 1982, Ser. No. 451,759
Claims priority, application Italy, Dec. 23, 1981, 25804 A/81
Int. Cl.³ A61K *31/27, 31/38*; C07C *153/00, 103/52*
U.S. Cl. 424—300 14 Claims

1. Novel chemical compounds having liver-protecting, desintoxicating, hypnotic and sedative properties having the general formula:



wherein R is a straight line or a branched alkyl radical having from 1 to 6 carbon atoms, R^1 is an —OR^2 group, or an —$N(R^2)_2$ group or an —O—$(CH_2)_n$—$N(R^2)_2$ group wherein R^2 is a hydrogen or a straight line or branched alkyl having

from 1 to 4 carbon atoms and n may vary from 1 to 3, and R^3 is equal to R^2 or may represent a group such as



4,460,602

UREA DERIVATIVES

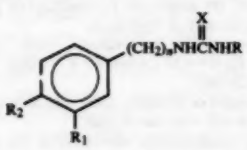
Brian L. Buckwalter, Yardley, Pa., and Thomas R. LaHann, Cleves, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 278,970, Jun. 30, 1981, abandoned. This application May 25, 1982, Ser. No. 381,672

Int. Cl.³ A61K *31/17, 31/165*

U.S. Cl. 424—322 29 Claims

1. Compounds of formula:



wherein n=1 or 0, wherein X is O or S when n=1, wherein X is S when n=0, wherein R is C_3–C_{12} alkyl or aralkyl, branched or unbranched, haloaryl, or C_3–C_{22} alkenyl, branched or unbranched, wherein R_1 is H, OH or OCH_3 and R_2 is H or OH when n=1, at least one of R_1 and R_2 being OH, and wherein R_1 is OH or OCH_3 and R_2 is OH when n=0; and pharmaceutically acceptable salts therof.

4,460,603

1-(2'-HALOALKYL)-AMIDOMETHYL-SUBSTITUTED ACETANILIDE FUNGICIDES

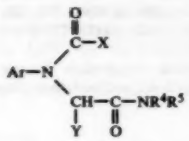
David C. K. Chan, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 207,106, Nov. 17, 1980, abandoned. This application Jul. 6, 1981, Ser. No. 280,653

Int. Cl.³ A01N *37/22;* C07C *103/82*

U.S. Cl. 424—324 7 Claims

1. A compound having the formula:



wherein

Ar is 2,6-dialkylphenyl;

R^4 is hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms or alkynyl of 2 to 4 carbon atoms;

R^5 is hydrogen or alkyl of 1 to 4 carbon atoms;

X is alkoxyalkyl of 2 to 12 carbon atoms; and

Y is 2-haloalkyl of 2 to 6 carbon atoms, 2-hydroxyalkyl of 2 to 6 carbon atoms or 2-alkoxyalkyl of 2 to 12 carbon atoms.

5. A method for the control of plant fungi which comprises applying to said fungi or their plant hosts a fungicidally effective amount of a compound defined in claim 1.

4,460,604

4-AMINO-4-ARYL-CYCLOHEXANONES

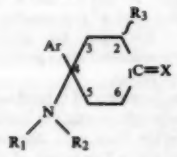
Daniel Lednicer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 23,921, Mar. 26, 1979, abandoned, which is a division of Ser. No. 840,861, Oct. 11, 1977, Pat. No. 4,180,584, which is a division of Ser. No. 692,589, Jun. 3, 1976, Pat. No. 4,065,573. This application Oct. 22, 1980, Ser. No. 199,415

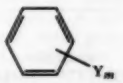
Int. Cl.³ A61K *31/335;* C07D *317/72*

U.S. Cl. 424—330 35 Claims

1. A compound of the formula:

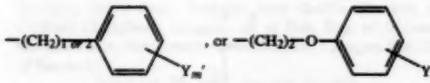


wherein X is oxo, aryl is



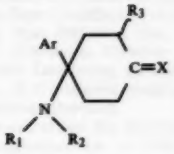
wherein m is zero, one or two, and Y is halogen, CF_3, alkyl of 1 to 4 carbon atoms, inclusive, alkoxy of 1 to 4 carbon atoms, inclusive, hydroxy, cycloalkyloxy of 3 to 6 carbon atoms, inclusive, alkylthio of 1 to 4 carbon atoms, inclusive, or

where Y' is halogen, CF_3, alkyl of 1 to 4 carbon atoms, inclusive, or alkoxy of 1 to 4 carbon atoms, inclusive; R_1 is hydrogen, or alkyl of 1 to 8 carbon atoms, inclusive, R_2 is hydrogen, alkyl of 1 to 8 carbon atoms, inclusive, —CH_2—alkenyl wherein alkenyl is of 2 to 8 carbon atoms, inclusive, acetyl, cycloalkylalkyl wherein cycloalkyl is of 3 to 6 carbon atoms, inclusive, and alkyl is of 1 to 3 carbon atoms, inclusive, β-hydroxyethyl, cycloalkyl of 3 to 6 carbon atoms, inclusive,

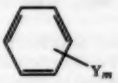


and R_3 is hydrogen, alkyl of 1 to 5 carbon atoms, inclusive, and the acid addition salts thereof.

20. An analgetic composition in unit dosage form comprising as an active ingredient an effective analgetic amount of a compound of the formula:

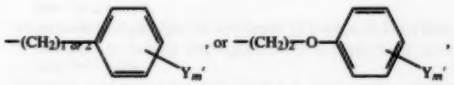


wherein X is oxo, aryl is



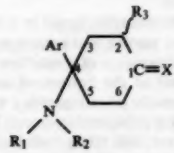
wherein m is zeor, one or two, and Y is halogen, CF_3, alkyl of 1 to 4 carbon atoms, inclusive, alkoxy of 1 to 4 carbon atoms, inclusive, hydroxy, cycloalkyloxy of 3 to 6 carbon atoms, inclusive, alkylthio of 1 to 4 carbon atoms, inclusive, or

where Y' is halogen, CF_3, alkyl of 1 to 4 carbon atoms, inclusive, or alkoxy of 1 to 4 carbon atoms, inclusive; R_1 is hydrogen, or alkyl of 1 to 8 carbon atoms, inclusive, R_2 is hydrogen, alkyl of 1 to 8 carbon atoms, inclusive, -CH_2-alkenyl wherein alkenyl is of 2 to 8 carbon atoms, inclusive, acetyl, cycloalkylalkyl wherein cycloalkyl of 3 to 6 carbon atoms, inclusive, and alkyl is of 1 to 3 carbon atoms, inclusive, β-hydroxyethyl, cycloalkyl of 3 to 6 carbon atoms, inclusive,

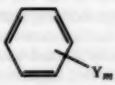


and R_3 is hydrogen, alkyl of 1 to 5 carbon atoms, inclusive, and the acid addition salts thereof, in association with a pharmaceutical carrier.

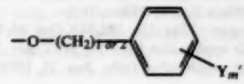
28. A process for inducing analgesia in humans and animals comprising the administration of an analgetic amount of a compound of the formula:



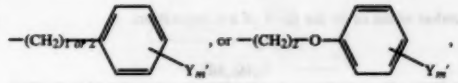
wherein X is oxo aryl is



wherein m is zero, one or two, and Y is halogen, CF_3, alkyl of 1 to 4 carbon atoms, inclusive, alkoxy of 1 to 4 carbon atoms, inclusive, hydroxy, cycloalkyloxy of 3 to 6 carbon atoms, inclusive, alkylthio of 1 to 4 carbon atoms, inclusive, or



where Y' is halogen, CF_3, alkyl of 1 to 4 carbon atoms, inclusive, or alkoxy of 1 to 4 carbon atoms, inclusive; R_1 is hydrogen, or alkyl of 1 to 8 carbon atoms, inclusive, R_2 is hydrogen, alkyl of 1 to 8 carbon atoms, inclusive, -CH_2-alkenyl wherein alkenyl is of 2 to 8 carbon atoms, inclusive, acetyl, cycloalkylalkyl wherein cycloalkyl is of 3 to 6 carbon atoms, inclusive, and alkyl is of 1 to 3 carbon atoms, inclusive, -hydroyethyl, cycloalkyl of 3 to 6 carbon atoms, inclusive



and R_3 is hydrogen, alkyl of 1 to 5 carbon atoms, inclusive, and the acid addition salts thereof, to a human or animal subject.

4,460,605

2-[2'-HYDROXY-3'-(1,1-DIMETHYLPROPYLAMINO)-PROPOXY]-β-PHENYLPROPIOPHENONE, ITS PHYSIOLOGICALLY ACCEPTABLE ACID ADDITION SALTS, AND PHARMACEUTICAL COMPOSITIONS

Gerd Petrik, and Rolf Sachse, both of Berlin, Fed. Rep. of Germany, assignors to Heiopharm W. Petrik & Co., Berlin, Fed. Rep. of Germany

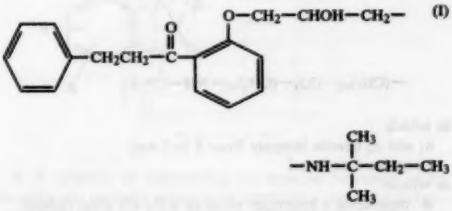
Filed Aug. 24, 1982, Ser. No. 410,933

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133814

Int. Cl.³ A61K *31/135;* **C07C** *97/10*

U.S. Cl. 424—330 **4 Claims**

1. 2-[2'-Hydroxy-3'-(1,1-dimethylpropylamino)-propoxy]-β-phenylpropiophenone of formula I



or its physiologically acceptable acid addition salts.

4. A method of treating heart rhythm disorders which comprises administering to a patient requiring said treatment 2-[2'-hydroxy-3'-(1,1-dimethylpropylamino)-propoxy]-β-phenylpropiophenone or its physiologically acceptable acid addition salt in an amount sufficient to produce an antiarrhythmic activity.

4,460,606

METHOD FOR FIGHTING INFESTATIONS BY ANTS

Franco Bettarini, Novara; Pietro Massardo, Milan; Paolo Piccardi, Milan, and Angelo Longoni, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

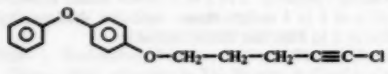
Continuation-in-part of Ser. No. 198,488, Oct. 20, 1980, Pat. No. 4,356,329. This application May 17, 1982, Ser. No. 379,177

Claims priority, application Italy, Jun. 21, 1978, 24794; Mar. 5, 1979, 20734

Int. Cl.³ A01N *31/14*

U.S. Cl. 424—341 11 Claims

1. A method for combating infestations by ants, consisting in distributing in the infested places an effective amount of the compound of formula:



(I)

either alone or in the form of a composition.

4,460,607

LIPID ABSORPTION-INHIBITING AGENTS AND THEIR USE

Hans-Joachim Kabbe, Leverkusen; Hans-Peter Krause, and Rüdiger Sitt, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

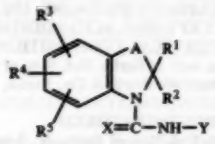
Division of Ser. No. 206,314, Oct. 31, 1980. This application Sep. 27, 1982, Ser. No. 424,828

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945238

Int. Cl.³ A61K *31/535*; C07D *265/36*

U.S. Cl. 424—248.5 13 Claims

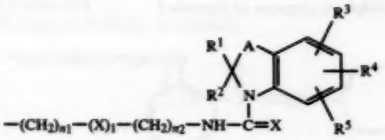
1. A pharmaceutical composition containing as an active ingredient a hypolipidemically effective amount of a compound which is an alkylurea of the formula



(I)

in which

Y represents a radical



in which

n_1 and n_2 denote integers from 3 to 9 and

l denotes 0 or 1 and

in which

R^1 represents a hydrogen atom or a C_1–C_6 alkyl radical,

R^2 represents a C_1–C_6 alkyl radical and

R^3, R^4 and R^5 are identical or different and each represent a hydrogen or halogen atom or a hydroxyl, cyano, C_1–C_6 alkyl, C_1–C_6 alkoxy, (C_1–C_6 alkoxy)-carbonyl, C_1–C_6 alkylmercapto, C_1–C_6 alkyl-sulphonyl, C_1–C_6 alkylsulphinyl, (C_1–C_6 alkyl)-carbonyl, optionally substituted aryl or arylkoxy radical each optionally mono- or di-substituted by halogen, trifluoromethyl or C_1–C_2-alkoxy,

X denotes oxygen or sulphur and

A represents

in which

R′ and R″ are identical or different and each denote a hydrogen atom or C_1–C_6 alkyl radical,

in admixture with an inert pharmaceutical carrier.

10. An alkylurea derivative of the formula (I), as defined in claim 1, in which

R^1 and R^2 are identical or different and each represent an alkyl radical with 1 or 2 carbon atoms,

R^3, R^4 and R^5 are identical or different and each represent a hydrogen, chlorine, or bromine atom or a trifluoromethyl, alkyl, alkylmercapto, or alkoxy radical, the said alkyl and alkoxy radicals or moieties each containing 1 to 4 carbon atoms, or represent a phenoxy or chlorophenoxy radical,

A represents

in which

R′ and R″ are identical or different and each denote a hydrogen atom or a methyl or ethyl radical, and

X represents oxygen.

4,460,608

SEPARATION OF ACCUMULATED DEPOSITS FROM ALCOHOLIC BEVERAGES BY FREEZING

Robert Charmat, 12, Rue des Marronniers, 75016 Paris, France

Filed Dec. 2, 1981, Ser. No. 326,579

Int. Cl.³ C12G *1/06, 3/02*

U.S. Cl. 426—11 6 Claims

1. A method of producing alcoholic beverages comprising in sequence the steps of:

(a) fermenting a fermentable liquid in a closed standing up vat having a top portion and bottom portion;

(b) accelerating deposition of impurities contained in said fermenting liquid at the bottom of said vat, by a step consisting essentially of refrigerating said liquid without freezing it with a refrigerating means located at the top portion of the vat, said refrigeration commencing at the top of said vat and progressing towards the bottom of said vat, thereby taking advantage of the downwards direction of cold propagation, said cold propagation speeding up decantation, crystallization and accumulation of said impurities at the bottom of the vat, and

(c) removing said deposited impurities by directly freezing the portion of said liquid located at the bottom of said vat with a freezing means located within the bottom portion of said vat to contain said impurities in the bottom portion of the vat and drawing off the unfrozen portion from above the frozen portion of said liquid to obtain said alcoholic beverage.

4,460,609

PROCESS FOR MAKING PASTA FILATA TYPE CHEESE

Bjarne Kristiansen; Tage Christiansen, both of Nibe; Poul F. Jensen, Aalborg; Bent Pedersen; Jens B. Kjaer, both of Hjallerup; Kjeld Kristensen, Vodskov; Svend O. Jensen, Dronninglund; Poul Lindstroem, Broendersley, and Bjarne Kjaer, Hjallerup, all of Denmark, assignors to Oerum Sogns Mejeri ApS, Hjallerup, Denmark

Continuation-in-part of Ser. No. 400,072, Jul. 20, 1982, abandoned. This application Nov. 23, 1982, Ser. No. 443,907
Claims priority, application Sweden, Jul. 20, 1981, 8104449
Int. Cl.³ A23C 9/14, 19/02
U.S. Cl. 426—39 10 Claims

1. In a process for producing cheese of the pasta filata type which comprises treating milk by ultrafiltration to give a concentrate containing elevated amounts of fat and protein, adding an acid to the concentrate to coagulate the concentrate and form a coagel, separating liquid from the coagel to increase its dry solids content, and subjecting the coagel to a kneading and stretching step, the improvement which comprises regulating the concentration of the acid fed to the coagulation step to obtain a calcium concentration in the coagel, after separation of liquid, of less than 1.5% based on the weight of fatfree dry solids.

4,460,610

COATED FRUIT JUICE IMPREGNATED PLANTAINS

George B. Macfie, Jr., Oviedo, Fla., assignor to A. Duda & Sons, Inc., Oviedo, Fla.

Continuation-in-part of Ser. No. 381,038, Mar. 23, 1982, Pat. No. 4,402,988. This application May 25, 1982, Ser. No. 381,765
Int. Cl.³ A23L 1/212, 3/34
U.S. Cl. 426—102 40 Claims

1. The process of impregnating plantains with fruit juice comprising:

selecting plantains having a sugar content derived from at least a 70% conversion of starch to sugar,

peeling said plantains,

applying at least a 23 inch vacuum to said plantains for at least 10 seconds,

immersing said plantains in a solution of fruit juice for a time sufficient to initiate impregnation of said plantains with said fruit juice,

releasing said vacuum and thereafter holding said plantains immersed within said solution for a dwell time of at least 10 seconds,

increasing the pressure on said plantains to at least 1.1 atmospheres,

removing said fruit juice impregnated plantain from said immersion, and

freezing the juice impregnated plantain.

4,460,611

METHOD OF SHAPING FOOD

Kisaku Suzuki, 1-19-8, Toshida, Nerima-ku, Tokyo, Japan

Filed Aug. 17, 1982, Ser. No. 408,974
Claims priority, application Japan, Aug. 20, 1981, 56-123394[U]; Oct. 30, 1981, 56-163285[U]; Nov. 26, 1981, 56-190261; Dec. 25, 1981, 56-197719[U]
Int. Cl.³ A23P 1/00; A22C 7/00
U.S. Cl. 426—272 1 Claim

1. A method of shaping a foodstuff, comprising the steps of:

introducing the foodstuff into a hopper;

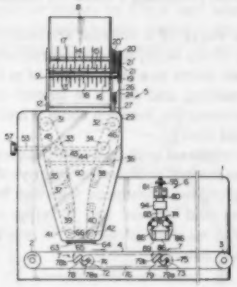
loosening the foodstuff by rotating loosener bars;

scraping the loosened foodstuff from said hopper by means of scraper bars;

moving the loosened and scraped foodstuff into a a path defined between a pair of substantially vertically extending feed belts which are moved in opposite directions to each other, so that the foodstuff scraped out is caused to drop while being progressively compressed between the feed belts, the path between the feed belts being progressively reduced in width;

cutting a predetermined amount or length of the compressed foodstuff by means of shutters which are movable toward and away from each other in the lateral direction;

moving the cut length of foodstuff intermittently by means of a horizontal conveyor belt;



inserting the cut length of the foodstuff into a cavity which is formed in a flexible member and open at one end thereof, the flexible member being formed of resilient material; and

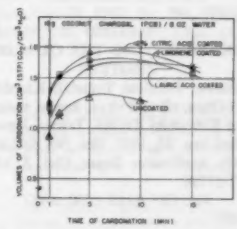
pressing the cut length of the foodstuff through the flexible member to shape the foodstuff.

4,460,612

PROCESS FOR PREPARING CARBONATED LIQUIDS WITH COATED CHARCOAL

Fouad Z. Saleeb, Pleasantville, and Annette Mitchell, Ossining, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 10, 1979, Ser. No. 83,510
Int. Cl.³ A23L 2/40
U.S. Cl. 426—477 8 Claims



1. A process of carbonating an aqueous beverage under atmospheric pressure comprising contacting said aqueous beverage with an amount of activated charcoal coated with a layer of an organic compound selected from the group consisting of di- or tri-carboxylic acid, a C_{10}–C_{18} fatty acid, a monocyclic terpene and soluble salts thereof and having adsorbed in the charcoal at least 20 cm^3 of carbon dioxide per gram of charcoal, said amount of activated charcoal being effective to produce in the beverage above 1.5 volumes of carbonation per volume of beverage in less than five minutes.

4,460,613

BASAL MATERIAL FOR THE PREPARATION OF TOFU

Angel A. Yang, Crestwood, and Robert J. Vander Zanden, Manchester, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Nov. 1, 1982, Ser. No. 438,111

Int. Cl.³ A23D 5/00; A23J 3/00

U.S. Cl. 426—601 20 Claims

1. A process for producing a dried soy cheese basal material comprising:

a. forming a slurry of a material selected from the group consisting of soy flour, soy concentrate and soy isolate,

b. heating said slurry to a temperature of at least about 220° F. and retaining said slurry in heated condition under positive pressure for between about 7 and 100 seconds;

c. cooling said slurry;

d. mixing an edible oil with said cooled slurry, said oil being added in an amount sufficient to improve the whiteness of soy cheese products produced with said basal material;

e. dewatering said mixture and blending said dewatered mixture with a carbohydrate mix to provide a dried soy cheese basal material.

4,460,614

FAT BLEND USEFUL FOR PRODUCING BUTTER-LIKE SPREADS

Wilhelm Stratmann, Weinheim, Fed. Rep. of Germany, and Paul F. Legge, Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Sep. 3, 1982, Ser. No. 414,721

Claims priority, application United Kingdom, Sep. 3, 1981, 8126747

Int. Cl.³ A23D 3/00, 5/00

U.S. Cl. 426—603 8 Claims

1. A butter-like fat blend comprising a non-interesterified component (i) consisting essentially of tallow, a tallaw olein, a tallow stearin or a mixture of said fats and an interesterified component (ii) consisting of a mixture of triglycerides obtained by interesterification of tallow, tallow olein, tallow stearin or a mixture thereof with a liquid oil or with a mixture of a liquid oil and an oil hydrogenated to a melting point not exceeding 43° C., wherein the ration of non-interesterified to interesterified component ranges from 75:25 to 25:75 and the ratio of tallow fat to oil in the interesterified mixture ranges from 75:25 to 25:75 and said fat blend displays the following fat solids profile:

N_{10}° C. = 34–60; N_{20}° C. = 10–25; N_{30}° C. ≦ 7; N_{35}° C. ≦ 2.

4,460,615

PROCESS FOR IMPROVING THE QUALITY OF WHEY PROTEIN

Tadayasu Furukawa; Tokuichi Taguchi; Kazuhiro Yamamoto, and Shigenori Ohta, all of Tokyo, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 430,208

Claims priority, application Japan, Oct. 2, 1981, 56-157268; Feb. 5, 1982, 57-17790

Int. Cl.³ A23J 1/20, 3/02

U.S. Cl. 426—657 3 Claims

1. A process for improving the quality of whey protein, which comprises maintaining a whey protein solution containing 3–15% by weight of protein at a Ph of from 8.5 to 11.5 and a temperature of from 35° to 50° C. for 2–240 minutes, adding to the solution a mixture of at least one acid selected from the group consisting of citric acid, phosphoric acid, polyphosphoric acids, phytic acid and oxalic acid with at least one acid selected from the group consisting of hydrochloric acid, sulfuric acid, lactic acid, tartaric acid, succinic acid and maleic acid at a normality ratio of 1:05 to 1:20 so as to adjust the pH of the solution to 6–8.

4,460,616

ACIDULATED DECATIONIZED MILK

Jean P. Rialland, Retiers, and Jean P. Barbier, St.-Erblon, both of France, assignors to Laiteries E. Bridel, Retiers, France

Division of Ser. No. 251,892, Apr. 7, 1981, Pat. No. 4,352,828.

This application Aug. 4, 1982, Ser. No. 405,287

Claims priority, application France, Apr. 17, 1980, 80 08644; Mar. 31, 1981, 81 06470

Int. Cl.³ A23C 9/146

U.S. Cl. 426—580 4 Claims

1. Acidulated decationized milk having a pH below or equal to 3.8, containing substantially the same content of proteins and lactose as ordinary milk, a mineral substance content less than that of ordinary milk, and trace amounts of sodium, potassium and calcium, and being storage stable at a temperature higher than 4° C., while containing no substances which are extraneous to the milk, including mineral acids and organic acids.

4,460,617

PROTEIN-FREE COFFEE WHITENER AND METHOD OF MAKING SAME

Richard L. Barndt, Highland Park; Gary A. Zwiercan, Califon, and Paolo C. Trubiano, Somerville, all of N.J., assignors to National Starch and Chemical Corp., Bridgewater, N.J.

Filed Jun. 4, 1982, Ser. No. 385,001

Int. Cl.³ A23C 11/00

U.S. Cl. 426—609 20 Claims

1. A dry coffee whitener comprising a dried emulsion concentrate comprising an edible fat having an average particle size of about 1–3 microns in diameter, said fat being stabilized with a degraded and esterified starch derivative having a flow viscosity of at least 15 seconds and a lipophilic character in an amount sufficient to provide said dry emulsion concentrate with a starch derivative to fat ratio in the range of 0.05–0.3 to 1, the emulsion having a pH below 8.0, said starch derivative comprising a degraded starch acid-ester of a substituted dicarboxylic acid anhydride.

4,460,618

ALUMINUM DEPOSITION ON SEMICONDUCTOR BODIES

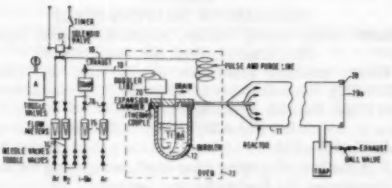
Rudolf A. H. Heinecke, Harlow, and Ronald C. Stern, Cheshunt, both of England, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 168,848, Jul. 10, 1980, abandoned, which is a continuation of Ser. No. 34,068, Apr. 27, 1979, abandoned. This application Oct. 26, 1981, Ser. No. 314,944

Claims priority, application United Kingdom, May 25, 1978, 22632/78

Int. Cl.³ B05D 3/06; C23C 11/00

U.S. Cl. 427—39 9 Claims



1. A process for the pyrolytic deposition of aluminum from tri-isobutyl aluminum (TIBA) on a hydrogen plasma activated surface of a semiconductor body, comprising the steps of:

a. activating the surface of a semiconductor body in a hydrogen glow discharge in the presence of a transport metal; and

b. pyrolytically depositing aluminum on said activated sur-

face of said semiconductor body, said depositing step comprising:

(i) bubbling a stream of dry, oxygen-free inert gas through a quantity of liquid TIBA so as to entrain a portion of TIBA vapor;

(ii) maintaining the liquid TIBA and inert gas at a temperature between 80° and 90° C.;

(iii) feeding the inert gas and entrained TIBA to a reaction chamber in which said activated surfaced semiconductor body is disposed;

(iv) maintaining a temperature in said reaction chamber within the range between 250° to 270° C. to cause the pyrolytic deposition of aluminum onto said activated surface of said semiconductor body; and

(v) supplying periodic pulses of dry, oxygen free inert gas without entrained TIBA to the reaction chamber during deposition whereby a substantially uniform TIBA concentration is maintained within said chamber.

4,460,619
METHOD FOR TRANSPORTING AND DEPOSITING VISCOUS MATERIALS

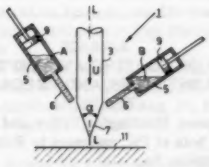
Pierre L. L. M. Derks, and Gerardus Van Herwijnen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 23, 1983, Ser. No. 497,465

Claims priority, application Netherlands, May 27, 1982, 8202164

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—57 **5 Claims**



1. A method of transporting and depositing viscous materials, in which a quantity of a viscous material to be transported and deposited is supplied by means of a vibrating tool to a substrate and is deposited on the substrate, comprising the steps of:

applying at least one viscous material in a metered quantity to the sonotrode of an ultrasonic tool; and

vibrating the sonotrode ultrasonically in such a manner that the quantity of viscous material is transported under the influence of the ultrasonic vibrations along the sonotrode to a free end thereof in a direction which is at an acute angle to the direction of vibration of the sonotrode, the quantity of viscous material being ultimately deposited on the substrate from the free end of the sonotrode.

4,460,620
INSULATED ELECTRICAL CONNECTOR AND METHOD OF MAKING SAME

Paul M. Deters, Manhattan Beach, Calif., assignor to Bussco Engineering, Inc., El Segundo, Calif.

Filed Jan. 18, 1982, Ser. No. 339,994

Int. Cl.³ H01R *43/00*

U.S. Cl. 427—58 **5 Claims**

1. The method of making an insulated electrical connector comprising:

utilizing a plurality of fixtures wherein each fixture includes a prong assembly;

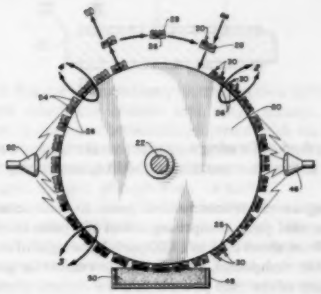
plugging a said electrical connector onto a said prong assembly wherein the electrical contacting surfaces are placed in direct contact with and are covered by said prong assembly thereby preventing coating of said electrical contacing surfaces;

locating a plurality of said electrical connectors on each said fixture;

attaching each said fixture onto the peripheral surface of a rotatable wheel forming a circumferential row of said fixtures about said wheel;

rotating the wheel which progressively moves said electrical connectors to be heated by a first heat source;

further rotation of said wheel causes submerging of said electrical connectors in a quantity of powdered plastic



which then evenly adheres forming a coating on the exterior surface of the heated electrical connectors;

continued rotation of said wheel causes removing of the now coated electrical connectors from the powdered plastic;

continued rotation of said wheel causing heating by a second heat source of the coated electrical connector to a sufficient temperature and for a sufficient length of time to cause fusing of the powdered plastic into an integral mass;

continued rotation of said wheel causes cooling of the now coated electrical connector; and

removing the fixtures from said wheel and then separating the electrical connectors from the fixtures.

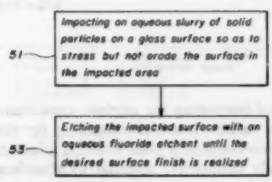
4,460,621
REDUCING GLARE FROM THE SURFACE OF A GLASS VIEWING WINDOW

Samuel Pearlman, Manheim Township, Lancaster County, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 21, 1983, Ser. No. 554,084

Int. Cl.³ B05D *5/06*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 427—64 **14 Claims**


Impacting an aqueous slurry of solid particles on a glass surface so as to stress but not erode the surface in the impacted area
51
Etching the impacted surface with an aqueous fluoride etchant until the desired surface finish is realized
53

1. A method for reducing glare from the surface of a glass viewing window comprising

impacting an aqueous slurry of solid particles on said surface in such manner as to stress the glass in the impacted area without substantial erosion of said impacted surface

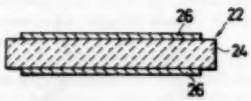
and then etching said surface with an aqueous liquid etchant containing active fluoride anions.

4,460,622

ELECTROCONDUCTIVE PASTE TO BE BAKED ON CERAMIC BODIES TO PROVIDE CAPACITORS, VARISTORS OR THE LIKE

Nobutatsu Yamaoka, Harunamachi, and Kazuo Sasazawa, Mabashi, both of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Division of Ser. No. 349,310, Feb. 16, 1982, abandoned. This application Jun. 6, 1983, Ser. No. 501,210
Claims priority, application Japan, Feb. 27, 1981, 56-27880
Int. Cl.³ H01G 1/01
U.S. Cl. 427—79 7 Claims



1. A method of forming a conductive electrode on a ceramic substrate to form a capacitor or the like, comprising the steps of:

applying an electroconductive paste to said ceramic substrate, said paste comprising about 100 parts of zinc powder, from about 0.01 to 15.00 parts by weight of an organic titanium compound, and an organic vehicle for pasting the mixture of the zinc powder and the organic titanium;

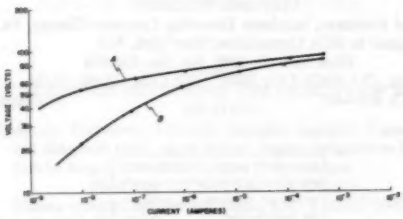
baking said ceramic substrate with the paste thereon to drive off the organic vehicle, whereby said organotitanium compound inhibits the oxidation of said zinc during said baking step, so that the unoxidized interiors of the zinc particles expand, breaking the oxide coatings thereon and are fused to one another, whereby an electrical conductor is formed of said zinc powders.

4,460,623

METHOD OF VARISTOR CAPACITANCE REDUCTION BY BORON DIFFUSION

Lionel M. Levinson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,695
Int. Cl.³ H01C 7/12, 17/30
U.S. Cl. 427—101 5 Claims



1. A method of decreasing the intrinsic capacitance of sintered ZnO based varistor material comprising the steps of:

applying a boron-containing glass which is substantially free of electrically conductive material to a surface of said sintered ZnO based varistor material;

heating said ZnO based varistor material having said boron-containing glass applied thereto at a temperature of between about 500° C. and about 1200° C. to diffuse a sufficient amount of said boron-containing glass into said ZnO based varistor material to effect a decrease in the intrinsic capacitance thereof; and

removing undiffused boron-containing glass from said surface, after said heating step.

4,460,624

PROCESS FOR THE MANUFACTURE OF THICK LAYER VARISTORS ON A HYBRID CIRCUIT SUBSTRATE

Michel Graciet; Annick Romann, and Francois Buchy, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 31, 1982, Ser. No. 413,552
Claims priority, application France, Sep. 4, 1981, 81 16872
Int. Cl.³ H01C 7/12
U.S. Cl. 427—102 6 Claims

1. A process for manufacturing varistors comprising forming a varistor in the form of a ceramic body containing at least 97% ZnO, then crushing this ceramic body into a first ceramic powder and then:

preparing a second binder powder formed by a conductive or semiconductive glass having a conductivity between 10^{-8} ohm.cm and 10^{6} ohms.cm, capable of assuming a liquid state or a pasty state at a temperature lower than 850° C.;

(b) preparing a silk-screen printing paste comprising 40 to 90% by weight of the first ceramic powder, 10 to 30% by weight of the second binder powder, the remainder being at least 10% by weight of an organic binder of a kind utilized in silk-screen printing;

(c) depositing the paste thus obtained on a non-refractory substrate by silk-screen printing, the substrate being first provided with an electrode forming the first electrode of the varistor and baking at a temperature of 850° C. or less; and

(d) completing the varistor by depositing two access electrodes by silk-screen printing on opposite faces of the varistor;

said varistor having a non-linearity coefficient of greater than 10.

4,460,625

METHOD OF COATING AND IMPREGNATING CONCRETE SUBSTRATES, AND PRODUCTS OBTAINED THEREBY

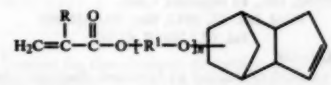
William D. Emmons, Huntingdon Valley, and Joseph A. Lavelle, Coopersburg, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 283,091, Jul. 16, 1981, Pat. No. 4,400,413, which is a continuation-in-part of Ser. No. 182,560, Aug. 29, 1980, abandoned. This application Dec. 22, 1982, Ser. No. 452,165
The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.
Int. Cl.³ C08J 3/20; C08K 3/36
U.S. Cl. 427—136 12 Claims

1. An acrylic polymer impregnant composition comprising an essentially anhydrous slurry of

(1) a non-volatile binder monomer system comprising

(a) from about 25% to 75% by weight, based on total of monomers, of at least one compound selected from isodecyl methacrylate, cetyl stearyl methacrylate, lauryl methacrylate, dodecyl pentadecyl methacrylate, cetyl eicosyl methacrylate, stearyl methacrylate and the dicyclopentenyloxyalkyl or dicyclopentenyl ester of a polymerizable α,β-unsaturated monocarboxylic acid selected from methacrylic acid or acrylic acid, the ester being represented by the formula



wherein

R is CH_3 or H,

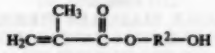
n is 0 or 1 and

R^1 is selected from

(i) alkylene groups having 2 to 6 carbon atoms and

(ii) oxyalkylene groups having 4 to 6 carbon atoms and having one or more oxygen atoms joining distinct segments of the alkylene chain, each segment having at least 2 carbon atoms, and

(b) from about 75% to 25% by weight, based on total of monomers, of at least one hydroxyalkyl methacrylate represented by the formula



wherein R^2 is a straight or branched chain (C_{10}–C_6) alkyl group or a (C_3–C_6) cycloalkyl group, the total of monomers being 100%; and

(2) a polymerization catalyst selected from

(a) about 0.1% to 3% by weight, based on total of monomers, of a (C_3–C_{18}) hydrocarbyl peroxide with about 0.1% to 5% by weight, based on total of monomers, of an aromatic amine polymerization accelerator, or

(b) about 0.1% to 3% by weight, based on total of monomers, of a (C_3–C_{18}) hydrocarbyl hydroperoxide with about 0.0005% to 2% by weight, based on total of monomers, of a polyvalent metal salt or complex,

(c) mixtures of (a) and 0.005% to 2% by weight, based on total amount of monomers, of a polyvalent metal salt or complex, or

(d) mixtures of (a) and (b).

4,460,626

HEAT-SENSITIVE RECORDING MATERIAL

Sukenori Nakamura; Akira Igarashi, and Hiroharu Matsukawa, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 291,153, Aug. 7, 1981, Pat. No. 4,415,633. This application Sep. 28, 1982, Ser. No. 426,060

Claims priority, application Japan, Aug. 12, 1980, 55-110942

Int. Cl.³ B41M *5/18*

U.S. Cl. 427—150 **3 Claims**

1. A process for producing a heat-sensitive recording material comprising applying to a base a coating solution containing a developer for heat-sensitive recording, said developer being prepared by the steps of:

(a) dispersing in a water medium,

(i) a heat-fusible substance having a melting point in the range of from 60° C. to 150° C. and which is miscible with an organic acid, wherein said heat-fusible substance has a lower melting point than said organic acid, and

(ii) an organic acid,

(b) heating the resulting dispersion at a temperature lower than the melting point of said heat-fusible substance under conditions that form a turbulent flow, and

(c) cooling the heated dispersion to ordinary temperatures.

4,460,627

POLYMERIC WELL TREATING METHOD

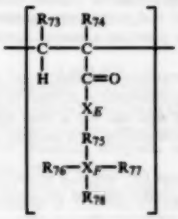
Jimmie D. Weaver; Lawrence E. Harris, and Weldon M. Harms, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 946,700, Sep. 28, 1978, abandoned. This application Aug. 25, 1982, Ser. No. 411,211

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—212 **3 Claims**

1. In a process for treating a particulate material to alter the surface properties, fluid flow and attraction/repulsion characteristics of said particulate material by using a polymer having a molecular weight in the range of about 900–50,000,000, the improvement of using a branched water soluble organic ionic polymer with one or more branch chains per backbone chain and with said branch chain having an average of at least two polymer units, said polymer having a substantial portion of the following polymer units defined by the formula:



wherein:

R_{73} and R_{74} are independently hydrogen or a hydrocarbon radical which can contain aryl, alkyl, alkenyl, alkynyl, hetero groups or combinations thereof with each hydrocarbon radical containing about 1 to 10 carbon atoms;

X_E and X_F are independently a hetero radical derived from nitrogen, oxygen, phosphorous, or sulfur,

R_{75} is a radical containing independently one or more hydrocarbon radicals which can contain aryl, alkyl, alkenyl, alkynyl, hetero groups or combinations thereof with each hydrocarbon radical containing about 1–50,000 carbon atoms, provided that the ratio of carbon atoms to hetero groups in said organic polymer is about 6:1 or less and the organic polymer is hydrophilic;

R_{76}, R_{77} and R_{78} are independently nonexistent, hydrogen or one or more hydrocarbon radicals which may contain aryl, alkyl, alkenyl, alkynyl, hetero groups or combinations thereof with each hydrocarbon radical containing about 2–50,000 carbon atoms, provided that the ratio of carbon atoms to hetero atoms in said organic polymer is about 6:1 or less and the organic polymer is hydrophilic; however, R_{76}, R_{77} and R_{78} cannot all be nonexistent; provided that at least one of R_{76}, R_{77} or R_{78} contains a hetero group or combinations thereof; and provided that the number of radicals attached to each atom equals the number of bonds of that atom;

said branched polymer being applied to said particulate material by means of a carrier fluid.

4,460,628

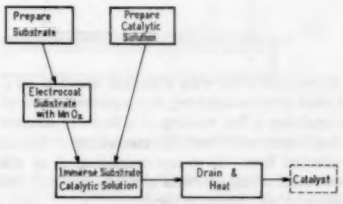
CATALYZED WET OXIDATION PROCESS AND CATALYST USEFUL THEREIN

Robert B. Wheaton, St. Joseph; John A. Nelson, Benton Harbor, and Donald E. Scherpereel, St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jul. 24, 1978, Ser. No. 927,277

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—214 **12 Claims**



1. A process for making a catalyst system for wet oxidation from titanium metal turnings comprising the steps of:

(A) electrolytically depositing a first coating of manganese oxide on titanium metal turnings,

(B) immersing the resulting first coated titanium metal turnings in an aqueous solution of at least one thermally decomposible water soluble metal salt wherein the metal is selected from the group consisting of manganese, mixtures of nickel and manganese, mixtures of colbalt and manganese, to produce a second coating over said first coating,

(C) heating the resulting titanium metal turnings in an oxygen containing atmosphere at least to the decomposition temperature of said salt for a time sufficient to convert substantially completely said second coating into metal oxide, and

(D) repeating steps (B) and (C) sequentially until a metal oxide layer of predetermined thickness results.

4,460,629

PROCESS FOR PREPARATION OF RESIN-COATED MOLDING SAND

Tetsuo Haraga, Toyota; Ryuji Nomura, Anjo; Isao Kai, and Motoyoshi Yamasaki, both of Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi and Asahi Yukizai Kogyo Kabushiki Kaisha, Miyazaki, both of, Japan

Continuation-in-part of Ser. No. 324,681, Nov. 25, 1981, abandoned. This application Jan. 8, 1982, Ser. No. 338,038

Claims priority, application Japan, May 21, 1981, 56-77056

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—221 8 Claims

1. A process for the preparation of a resin-coated molding sand, which comprises coating sand grains with a liquid binder comprising a phenolic resin component and a polyisocyanate component, wherein the sand grains are coated with an organic solvent prior to the coating of the sand grains with the liquid binder.

4,460,630

METHOD OF FORMING PORCELAIN ENAMELS ON ALUMINIZED STEEL

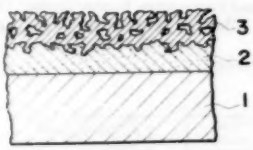
Atsushi Nishino, Neyagawa; Kazunori Sonetaka; Kunio Kimura, both of Hirakata, and Yoshihiro Watanabe, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 191,148, Sep. 26, 1980, abandoned, which is a continuation of Ser. No. 14,905, Feb. 23, 1979, abandoned. This application Mar. 9, 1982, Ser. No. 356,463

Claims priority, application Japan, Mar. 15, 1978, 53-30443; Sep. 4, 1978, 53-108999

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—376.2 22 Claims



1. A method of forming porcelain enamels on a dip aluminized steel sheet comprising the sequential steps of:

(a) applying a first coating of a first slip adapted to form a first layer, said first slip containing a frit and a binder selected from the group consisting of an alkali silicate, colloidal silica, colloidal alumina, silicone resins, organic binders, and mixtures thereof;

(b) drying said first coating at a temperature below the softening point of said frit in said first slip at a temperature less than 350° C.;

(c) applying a second coating of a second slip adapted to form a second layer; and

(d) firing said first and second coatings in a single firing step after the application of all the slip coatings.

4,460,631

SEALABLE, BIAXIALLY STRETCHED POLYPROPYLENE FILM HAVING HIGH SCRATCH RESISTANCE, AND PROCESS FOR ITS MANUFACTURE

Gerhard Stegmeier, Mainz; Siegfried Janocha, Wiesbaden, and Hartmut Hensel, Schlangenbad, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 28, 1981, Ser. No. 315,612

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 3041286

Int. Cl.³ B32B *27/08*

U.S. Cl. 428—35 22 Claims

1. A sealable biaxially stretched composite polypropylene film, comprising:

a substrate layer comprising polypropylene; and

at least one heat-sealable ethylene polymer layer comprising an ethylene polymer applied to at least one side of said polypropylene layer and having a scratch resistance of ≦ about 50% gloss reduction, relative to an initial gloss of 100%, measured according to ASTM standard specification D673-70 and a density of 24 about 0.95 g/cm³, wherein said ethylene polymer comprises polyethylene or a copolymer of ethylene and a minor amount of a comonomer which is copolymerizable with said ethylene, prepared by a process comprising the steps of:

providing said polypropylene substrate layer;

coating said polypropylene substrate layer with at least one of said ethylene polymer layers in a heated condition and thereby bonding said ethylene polymer layer to said polypropylene layer to form a film;

immediately chilling said hot ethylene polymer layer of said film to a first temperature of less than or equal to about 70° C.; and

subsequently stretching the composite film at a second temperature higher than said first temperature.

4,460,632

ADHESIVE BLENDS AND COMPOSITE STRUCTURES

Ashok M. Adur, Elk Grove Village; Seymour Schmukler, Palatine; John Machonis, Jr., Schaumburg, and Mitsuzo Shida, Barrington, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Division of Ser. No. 372,209, Apr. 26, 1982. This application Jun. 17, 1983, Ser. No. 505,222

Int. Cl.³ C08L *51/06*

U.S. Cl. 428—35 33 Claims

1. A composite structure comprising:

(A) a substrate, and adhered thereto

(B) an adhesive blend consisting essentially of:

(i) medium density polyethylene comprising a branched ethylene homopolymer having a density of about 0.93–0.94 g/cc;

(ii) linear low density polyethylene comprising a copolymer of ethylene and an unsaturated aliphatic hydrocarbon having a density of about 0.91–0.94 g/cc; and

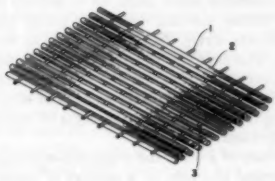
(iii) a HDPE polymer comprising a linear homopolymer or copolymer of ethylene having a density of about 0.94–0.97 g/cc grafted with carboxylic acids or derivatives.

4,460,633

NON-WOVEN REINFORCEMENT FOR COMPOSITE

Hiroyasu Kobayashi, Suita; Akihisa Inoue, Hirakata, and Katsushi Tsujii, Amagasaki, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Jurashiki, Japan

Filed Dec. 14, 1982, Ser. No. 449,800
Claims priority, application Japan, Dec. 16, 1981, 56/203870; Nov. 5, 1982, 57/194975
Int. Cl.³ B32B 5/12
U.S. Cl. 428—110 9 Claims



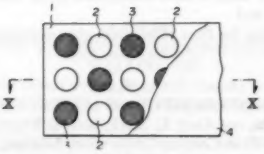
1. A non-woven reinforcement for composites, which comprises warps on at least one side of wefts bonded at intersections of the warps and the wefts, in which the warps consist of a multi-filament selected from carbon fiber, graphite fiber, glass fiber and aromatic polyamide fiber, have a number of twist of 5 to 40 times/m, and comprise no impregnated adhesive agent, prior to being bonded to said wefts and the wefts have a number of twist of 0 to 40 times/m and comprise adhesive agent.

4,460,634

ADHESIVE SHEET AND METHOD FOR MANUFACTURING THE SAME

Masaaki Hasegawa, No. 49-20, Higashi Mukojima 2, Sumida-ku, Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,696
Claims priority, application Japan, Dec. 29, 1979, 54-170648; Feb. 27, 1980, 55-23519; Feb. 29, 1980, 55-25076
Int. Cl.³ G09F 15/02
U.S. Cl. 428—124 9 Claims



1. A display poster comprising a pressure-sensitive adhesive sheet capable of removably adhering to a substrate without damaging said substrate, said composite sheet comprising:

(a) a single base sheet having first and second surfaces;

(b) a plurality of distinct strips of pressure-sensitive adhesive material affixed on said first sheet surface and bearing a pressure-sensitive adhesive for adhesively but removably affixing said sheet onto said substrates, said adhesive strips lying substantially on the same plane, said plane being elevated with respect to said sheet surface;

(c) a plurality of distinct non-adhesive strips also affixed on said first sheet surface, said non-adhesive strips also lying on substantially the same plane, said plane also being elevated with respect to said first sheet surface and substantially of the same elevation as the plane of said adhesive strips, said non-adhesive strips supporting said base sheet so as to lie even on said substrate; said adhesive and non-adhesive strips being alternately disposed in an equally spaced relation on said first sheet surface, thereby leaving a substantial portion of said first sheet surface free; and

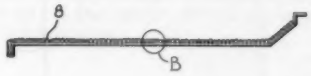
(d) indicia consisting of the display of said poster disposed on said second sheet surface; wherein said substrate is different from said second sheet surface.

4,460,635

METHOD OF FORMING COATINGS, COATINGS SO FORMED AND ARTICLES COATED THEREBY

Graham T. Jones; Warren S. Dow, and Geoffrey L. Wearne, all of Auckland, New Zealand, assignors to AHI Operations Limited, Manukau, New Zealand

Continuation of Ser. No. 307,682, Oct. 1, 1981, abandoned, which is a continuation of Ser. No. 102,656, Dec. 12, 1979, abandoned. This application Jul. 22, 1983, Ser. No. 516,426
Claims priority, application New Zealand, Dec. 14, 1978, 189172; Jun. 27, 1979, 190864
Int. Cl.³ B05D 1/12
U.S. Cl. 428—142 8 Claims



1. A coated article comprising a base sheet material comprising an uncoated galvanized sheet metal tile and a composite coating comprising a bitumen primer layer applied as an emulsion to said base sheet material, an ultraviolet opaque barrier layer applied to said bitumen primer layer while said bitumen primer layer has a water content of between 20% and 40% by weight, said barrier material being of a consistency, composition and thickness such that the bitumen primer layer does not bleed through the barrier layer and the barrier layer adheres to the bitumen primer layer and a coating of stone chips applied to the barrier layer in a manner such that the stone chips are partially embedded at least in the barrier layer, said barrier layer having a viscosity and surface tension which permits capillarization by said barrier layer around said chips to occur so that the stone chips are held in position on curing of the bitumen primer layer but the stone chips are not completely covered by the barrier layer.

4,460,636

OPTICAL INFORMATION RECORD MEMBER

Kenjiro Watanabe, Shin, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 24, 1982, Ser. No. 361,384
Claims priority, application Japan, Mar. 27, 1981, 56-45174; May 11, 1981, 56-70352
Int. Cl.³ B41M 5/00, 5/26
U.S. Cl. 428—212 5 Claims

1. An optical information record member comprising:

a substrate;

a first layer formed on said substrate made of a material having high absorptance of an incident light of a predetermined wavelength in which a part of said incident light is converted to heat, and

a second layer formed on said first layer made of a material in which absorptance of an incident light having predetermined wavelength is smaller than that of said first layer and in which an optical characteristic for a light having

said predetermined wavelength is changed by irradiation of said incident light together with the heat generated in said first layer, said second layer having a thickness of at least 200 but not more than 1600 angstrom whereby an information signal can be recorded on said second layer by the change of the optical characteristics of said second layer.

4,460,637

INK JET RECORDING SHEET

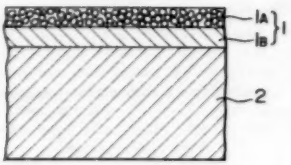
Shigehiko Miyamoto, Kamagaya, and Yoshinobu Watanabe, Matsudo, both of Japan, assignors to Mitsubushi Paper Mills, Ltd., Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 430,385

Claims priority, application Japan, Dec. 24, 1981, 56-271793

Int. Cl.[3] **B32B** *3/26, 7/02;* **B41M** *5/00*

U.S. Cl. 428—212 **35 Claims**



1. An ink jet recording sheet comprising a support and one or more ink receptive layers disposed thereon, wherein the pore radius distribution curve of the uppermost ink receptive layer shows a peak at 0.2 to 10 μm and that of the ink receptive layer or layers as a whole shows two peaks, one at 0.2 to 10 μm and the other at 0.05 μm or below.

4,460,638

FIBER REINFORCED GLASS MATRIX COMPOSITES

Loren A. Haluska, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Apr. 6, 1983, Ser. No. 482,679

Int. Cl.[3] **D03D** *3/00*

U.S. Cl. 428—224 **64 Claims**

1. A method of preparing fiber reinforced glass composites which method comprises,

(A) impregnating high modulus fibers with a thermosetting silazane polymer dissolved in an organic solvent;

(B) forming a prepreg by drying the product from (A);

(C) pressing the dried product of (B) at an temperature not greater than about 300° C.;

(D) curing the pressed prepreg from (C) at a temperature not greater than about 300° C. for a time sufficient to insure complete or nearly complete cross-linking in the prepreg;

(E) slowly firing the pressed and cured prepreg from (D) to a temperature of at least 1000° C. in an inert atmosphere or vacuum until a fiber reinforced glass composite is obtained; and

(F) cooling the fiber reinforced glass composite.

4,460,639

FIBER REINFORCED GLASS MATRIX COMPOSITES

Frank K. Chi, and Gary L. Stark, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 6, 1983, Ser. No. 482,685

Int. Cl.[3] **D03D** *3/00*

U.S. Cl. 428—224 **71 Claims**

1. A method of perparing fiber reinforced glass composites which method comprises

(A) impregnating high modulus fibers with resin sol, which resin sol is selected from the group consisting essentially of

(i) a sol of an organosilsesquioxane having the average formula

$[C_6H_5SiO_{3/2}][RSiO_{3/2}]$

wherein $C_6H_5SiO_{3/2}$ is present in said organosilsesquioxane in the amount of 5 to 100 percent by weight and $RSiO_{3/2}$ is present in the amount of 0 to 95 percent by weight based on the total weight of organosilsesquioxane present, and where R is an alkyl radical containing from 1 to 4 carbon atoms;

(ii) a mixture of a sol of the organosilsesquioxane from (i) and a colloidal metal oxide, or a mixture of colloidal metal oxides, selected from the group consisting of SiO_2, Al_2O_3, ZrO_2, TiO_2, SnO_2, $ZrSiO_4$, B_2O_3, La_2O_3, Sb_2O_5; wherein $C_6H_5SiO_{3/2}$ is present in said organosilsesquioxane in the amount of 5 to 90 percent by weight and $RSiO_{3/2}$ is present in the amount of 10 to 95 percent by weight based on the total weight of organosilsesquioxane present; and

(iii) a mixture of a sol of the organosilsesquioxane from (i) and a metal alkoxide, or a mixture of metal alkoxides, having the general formula

$M(OR')_x$

wherein M is a metal atom, R' is an alkyl radical containing from 1 to 4 carbon atoms, and x is 3 or 4, which metal alkoxide is capable of hydrolyzing and condensing in water; wherein $C_6H_5SiO_{3/2}$ is present in the amount of 5 to 90 percent by weight and $RSiO_{3/2}$ is present in the amount of 10 to 95 percent by weight based on the total weight of organosilsesquioxane present;

(B) forming a prepreg by drying the product from (A);

(C) heating the prepreg of (B) at an elevated temperature for a time sufficient to effect partial curing but to avoid excessive curing of the resin;

(D) pressing the prepreg from (C) at a temperature not greater than about 300° C.;

(E) curing the pressed prepreg from (D) at a temperature not greater than about 300° C. for a time sufficient to insure complete or nearly complete cross-linking in the prepreg;

(F) slowly firing the pressed and cured prepreg from (E) to a temperature of at least 1000° C. in an inert atmosphere or vacuum until a fiber reinforced glass composite is obtained; and

(G) cooling the fiber reinforced glass composite.

4,460,640

FIBER REINFORCED GLASS MATRIX COMPOSITES

Frank K. Chi, and Gary L. Stark, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 6, 1983, Ser. No. 482,682

Int. Cl.[3] **D03D** *3/00*

U.S. Cl. 428—224 **77 Claims**

1. A method of preparing fiber reinforced glass composites which method comprises

(A) impregnating high modulus fibers with a thermosetting organosilicone resin dissolved in an organic solvent;

(B) forming a prepreg by drying the product from (A);

(C) heating the dried product of (B) at an elevated temperature for a time sufficient to effect partial curing but to avoid excessive curing of the organosilicone resin;

(D) pressing the prepreg from (C) at a temperature not greater than about 300° C.;

(E) curing the pressed prepreg from (D) at a temperature not greater than about 300° C. for a time sufficient to insure complete or nearly complete cross-linking in the prepreg;

(F) slowly firing the pressed and cured prepreg from (E) to a temperature of at least 1000° C. in an inert atmosphere or vacuum until a fiber reinforced glass composite is obtained; and

(G) cooling the fiber reinforced glass composite.

4,460,641

MICROPOROUS HOLLOW FIBERS AS PROTECTANTS AGAINST TOXIC AGENTS

Sol J. Barer, Fanwood, and Michael M. Besso, West Orange, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 476,944
Int. Cl.³ B32B 7/00
U.S. Cl. 428—246 5 Claims

1. A chemically protective fabric material comprising at least one layer of a fabric of microporous hollow fibers comprising a relatively inert synthetic hydrophobic polymer and having an average inner diameter of from about 20 to about 1500 microns, an average wall thickness of from about 5 to about 75 microns, an average effective pore size of from about 50 to about 5000 Angstroms, a porosity of from about 40 to about 90%, and an air permeability of less than about 20 Gurley seconds, said microporous hollow fibers further having the lumina thereof filled with at least one neutralizing agent capable of neutralizing toxic chemical or biological agents.

4,460,642

WATER-SWELLABLE COMPOSITE SHEET OF MICROFIBERS OF PTFE AND HYDROPHILIC ABSORPTIVE PARTICLES

Louis A. Errede, North Oaks; James D. Stoesz, St. Paul, both of Minn., and Jenny Upton, Bridgend, Wales, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 277,990, Jun. 26, 1981, Pat. No. 4,373,519. This application Nov. 23, 1982, Ser. No. 444,199
The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.
Int. Cl.³ B32B 5/16; A61F 13/18; A47C 21/06
U.S. Cl. 428—283 16 Claims

1. A composite sheet material comprising:

(a) a network of interlaced microfibrous polytetrafluoroethylene forming a fibril matrix, and

(b) 1.0 to 10 parts of hydrophilic absorptive particles per part of PTFE by weight enmeshed in said matrix, the absorptive particles having absorptive capacity greater than 1.0 gram of water per gram of dry particles,

wherein substantially all of said hydrophilic absorptive particles are unavailable for sloughing.

4,460,643

NONWOVEN FIBROUS BACKING FOR VINYL WALLCOVER

William P. Stevens, Oneida, Wis., and Claudio Orefice, Enfield, Conn., assignors to The Dexter Corporation, Windsor Locks, Conn.

Filed Feb. 7, 1983, Ser. No. 464,391
Int. Cl.³ B32B 7/00
U.S. Cl. 428—284 9 Claims

1. A wallcover backing for strippable vinyl wallcovering comprised of a dimensionally stable unitary, multistratum, nonwoven fibrous web having a fibrous top stratum for secure nondelaminating engagement with a vinyl layer superimposed thereon and a fibrous base stratum integrated with said top stratum for strippable adhering engagement to a wall or the like, said top stratum comprising at least 5 percent by weight of the web and having a smooth exposed surface for direct adhesion to the vinyl layer, said multistratum web including about 15–45 percent by weight of a binder, at least said base stratum containing an adhesive penetration inhibitor to inhibit migration of a wallcover adhesive into the fibrous web and to promote strippability of the web from the wall, said top stratum including up to at least 90 percent by weight of a fusable thermoplastic fibrous material, said base stratum including at least 15 percent by weight of a synthetic fiber thermally stable up to at least the fusion temperature of said fusable fibrous material, said synthetic fibers having free ends at the surfaces of the base stratum, said top stratum being present in an amount sufficient to completely cover all the synthetic fiber free ends confronting said top stratum.

4,460,644

POLYURETHANE FOAM IMPREGNATED WITH OR COATED WITH FABRIC CONDITIONING AGENT, ANTI-MICROBIAL AGENT AND ANTI-DISCOLORANT

Mary J. Pavlich, Morristown, N.J., assignor to Beecham Inc., Clifton, N.J.

Filed Dec. 27, 1982, Ser. No. 453,221
Int. Cl.³ B32B 9/00; B05D 3/12
U.S. Cl. 428—314.4 40 Claims

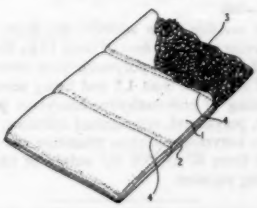
1. An article useful for conditioning clothes in an automatic laundry dryer during the drying cycle which article comprises a flexible polyurethane foam substrate impregnated with or coated with an effective amount of a fabric conditioning agent, an effective amount of a halide ion-containing anti-microbial agent and an anti-discoloration-effective amount of zinc sulfate, sorbitol or dextrose.

4,460,645

INSULATION

John C. Jones, Abernant; Anthony R. Bates, Radyr; Roland Dewsberry, Peterson Super Ely, and Paul A. Ryan, Cardiff, all of Wales, assignors to University College Cardiff, Cardiff, Wales

Continuation of Ser. No. 13,320, Feb. 21, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,576
Int. Cl.³ B32B 5/16, 7/08
U.S. Cl. 428—323 17 Claims



1. A thermal insulation material comprising an aggregate array of resilient elements forming a thermally insulative resilient mass with said elements being at least loosely packed together in random relationship with respect to each other, said elements being formed as fragmented and separated sheet material, said sheet material being selected from the group consisting of natural and synthetic material having a metallised coating on at least one surface thereof, said elements having a non-circular cross-section, and formed in shapes selected from the group consisting of strips, flakes and platelets, said non-circular cross-sectioned strips, flakes and platelets having geometric shapes which are selectively regular and irregular, and having selected uniform and non-uniform thicknesses and widths, said elements having at least one major face thereof metallized, each of said elements having at least a portion including an edge portion thereof deformed so as to increase the resilience thereof and facilitate the formation of spaces between adjacent ones of said elements in said array, the form of the deformation being selected from the group consisting of corrugation, dimples, crinkles and perforations.

4,460,646

ADHESIVE RESIN COMPOSITION AND LAMINATE THEREOF

Hiroshi Inoue; Masaaki Isoi, both of Saitama, and Kazuo Sei, Yokohama, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1982, Ser. No. 359,344
Claims priority, application Japan, Apr. 7, 1981, 56-51100
Int. Cl.³ B32B *15/00*
U.S. Cl. 428—344 10 Claims

1. An adhesive resin composition which comprises a mixture of (A) from 70 to 98 parts by weight of linear low density polyethylene and (B) and from 2 to 30 parts by weight of synthetic olefin or butyl rubber, said mixture being reacted with an unsaturated carboxylic acid or a derivative thereof, said linear low density polyethylene being a copolymer of ethylene and 3 to 14 weight percent alpha-olefin and having a density of 0.915 to 0.935 and the weight-average molecular weight/number-average molecular weight ratio from 3 to 12 and being substantially free of long chain branching.

7. A laminate comprising a layer of an adhesive resin composition and a layer of a material selected from the group consisting of a metal and thermoplastic resin, said adhesive resin composition being a mixture of (A) from 70 to 98 parts by weight of linear low density polyethylene and (B) from 2 to 30 parts by weight of synthetic olefin or butyl rubber, said mixture being reacted with an unsaturated carboxylic acid or a derivative thereof, said linear low density polyethylene being a copolymer of ethylene and 3 to 14 weight percent alpha-olefin and having a density of 0.915 to 0.935 and the weight-average molecular weight/number-average molecular weight ratio from 3 to 12 and being substantially free of long chain branching.

4,460,647

FIBRETS SUITABLE FOR PAPER OPACIFICATION

Charles H. Keith, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,000
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—369 6 Claims

1. A fibret suitable as an additive for paper opacification, said fibret having a surface area of from 15 to 30 square meters per gram and comprising a polymeric host having an index of refraction of not more than 1.5 and being selected from the group consisting of polymethylmethacrylate, polypropylene, polyethylene, polyacetyl, regenerated cellulose, cellulose acetate, cellulose butyrate, cellulose triacetate and polytetrafluro ethylene and from 40 to 75% by weight of titanium dioxide light scattering pigment.

4,460,648

POROUS BICOMPONENT ACRYLIC SYNTHETIC FIBERS COMPRISING CELLULOSE ACETATE IN AN ACRYLIC MATRIX AND METHOD FOR PRODUCING SAID FIBERS

Yoshikazu Kondo; Toshihiro Yamamoto, and Takaji Yamamoto, all of Hofu, Japan, assignors to Kanebo, Ltd., Tokyo and Kanebo Synthetic Fibers Ltd., Osaka, both of, Japan

Division of Ser. No. 156,993, Jun. 6, 1980, Pat. No. 4,351,879.
This application Jul. 12, 1982, Ser. No. 397,280
Claims priority, application Japan, Jun. 18, 1979, 55-77046; Jun. 18, 1979, 55-77049; Oct. 1, 1979, 55-127065; Oct. 1, 1979, 55-127066
Int. Cl.³ B32B *27/02;* D01F *8/10;* D02G *3/00*
U.S. Cl. 428—373 8 Claims

1. Acrylic composite fibers having water absorption property wherein a component A consisting of 2～50% by weight of cellulose acetate and 50～98% by weight of an acrylic polymer and a component B consisting of an acrylic polymer are bonded in a conjugate ratio of 2/8～8/2 (by weight) along the fiber axial direction, the component A has substantially no microvoid but has mainly macrovoids, a porosity in the entire fibers is 0.05～0.75 cm^3/g, a surface area of the voids is no greather than 15 m^2/g, and the cellulose acetate is distributed in elongated forms along the axial directions of the fibers.

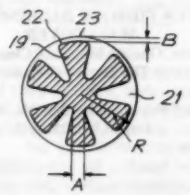
5. Acrylic composite fibers having water absorption property and latent crimpability wherein two components A and B, consisting of 2～50% by weight of cellulose acetate and 50～98% by weight of an acrylic polymer and having difference of at least 2% by weight in a plasticizing component in the acrylic polymer, are bonded eccentrically in a conjugate ratio of 7/3～3/7 (by weight), said fibers have substantially no microvoids but mainly macrovoids, a porosity of 0.05～0.75 cm^3/g and a surface area of voids no greater than 15 m^2/g, and the total amount of cellulose acetate in the fibers is 2–30% by weight which is distributed in elongated forms along the axial directions of said fibers.

4,460,649

COMPOSITE FIBER

Yeun H. Park, Daegu; Jong L. Woo, Kyungsangbuk, and Hak M. Kim, Daegu, all of Rep. of Korea, assignors to Kolon Industries Inc., Seoul, Rep. of Korea

Filed Sep. 2, 1982, Ser. No. 414,165
Claims priority, application Rep. of Korea, Sep. 5, 1981, 3310/1981[U]
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—373 4 Claims



1. A composite filter having a radius R and comprising an inner component and an outer component, one of said components being a fiber-forming polyamide and the other being a fiber-forming polyester, said inner component having a core and at least five wedge-shaped segments extending radially from said core, each of said segments having a minimum width, A, proximate said core and having an outer end; and said second component being disposed in and filling the spaces between said segments and overlying said outer ends in a layer of thickness, B, where

$1/20R < A < \frac{1}{4}R$, and

$1/20R < B < \frac{1}{4}R$.

bringing a copper alloy filler in close proximity to both segments, said copper alloy filler consisting essentially of, in weight percent, about 0.03% to about 0.08% boron, about 0.12% to about 0.60% zirconium, the balance being copper together with impurities and incidental elements normally associated with copper and said copper alloy filler having a ratio of zirconium to boron of at least 4 to 1; and

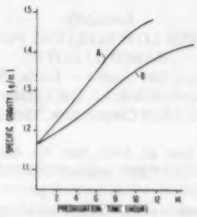
welding said copper segments together by melting said copper alloy filler.

4,460,650

ACRYLONITRILE FIBERS, A PROCESS FOR PRODUCING ACRYLONITRILE FIBERS, AS WELL AS PRODUCING PEROXIDIZED FIBERS, FIBROUS ACTIVE CARBON OR CARBON FIBERS THEREFROM

Hiroyasu Ogawa; Kazuo Izumi, and Kenzi Shimazaki, all of Shizuoka, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,489
Claims priority, application Japan, Dec. 24, 1981, 56-214088; Dec. 24, 1981, 56-214089
Int. Cl.³ B32B 9/00, 15/00; D01F 9/12; D02G 3/00
U.S. Cl. 428—389 13 Claims



1. Acrylonitrile fibers which have been treated with a composition comprising a watersoluble basic aluminum salt of the formula:

$$Al_2(OH)_l(A)_m(B)_n(C)_p(Cl)_q \quad (I)$$

where

(1) A, B and C stand for mutually different acid residues;

(2) l and q are both an integer or decimal fraction larger than 0;

(3) m, n and p are 0 or an integer or decimal fraction and make a total which is not zero;

(4) $l+mEm+nEn+pEp+q=6$(Em, En and Ep are the valence numbers of A, B and C, respectively);

$$0.4 \leqq \frac{1}{l+m+n+p+q} \leqq 0.9; \quad (5)$$

so that an amount of 0.005 to 5.0% by weight of elemental aluminum is present in the salt in contact with the fibers based on the weight of the treated fibers.

4,460,651

MAGNETIC RECORDING MEDIUM

Akihiko Hosaka; Kiyotaka Okuyama, and Kiyoto Kanazawa, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Mar. 16, 1983, Ser. No. 475,950
Claims priority, application Japan, Apr. 1, 1982, 57-55018
Int. Cl.³ H01F 10/02
U.S. Cl. 428—402 2 Claims

1. In a magnetic recording medium comprising a magnetic layer coated on a substrate and composed of ferromagnetic metal or alloy powder dispersed in a binder, an improvement wherein the magnetic layer contains Al_2O_3 having an average particle size of at most 1 μm and an α form rate of from 60 to 90%.

4,460,652

THROMBORESISTANT MOLDED ARTICLE AND METHOD FOR ITS PRODUCTION

Peter S. Francis, Rose Valley, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 311,841, Oct. 16, 1981, Pat. No. 4,387,183.
This application Feb. 22, 1983, Ser. No. 468,783
Int. Cl.³ B32B 27/00; C08F 8/12
U.S. Cl. 428—409 3 Claims

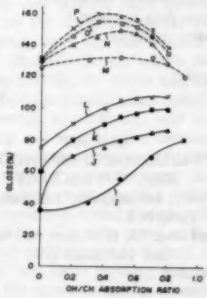
1. A thromboresistant molded article which consists of a core comprising a copolymer of a monovinyl aromatic monomer and an alpha, beta-unsaturated cyclic anhydride and a grafted water-swollen hydrophilic polymer coating on the core.

4,460,653

MAGNETIC RECORDING MEDIUM

Hitoshi Azegami, Tobu; Hiroshi Kawahara, Saku, and Fujio Shibata, Komoro, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 441,281, Nov. 12, 1982, abandoned.
This application Oct. 24, 1983, Ser. No. 544,804
Claims priority, application Japan, Nov. 16, 1981, 56-182253; Nov. 16, 1981, 56-182254
Int. Cl.³ H01F 10/02
U.S. Cl. 428—425.9 10 Claims



1. A magnetic recording medium, comprising a magnetic layer and a non-magnetic substrate therefor, which magnetic layer is formed by dispersing magnetic powder in a vehicle formed of a copolymer containing vinyl chloride, another monomer copolymerizable with vinyl chloride, a vinyl ester of an alkanoic acid and a saponification product thereof having an OH/CH absorption ratio of 0.2 to 0.7 in the infrared absorption spectrum, and a rubbery binder.

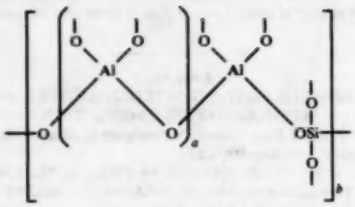
4,460,654

ALUMINOSILICATE COATING METHOD, COATED ARTICLES AND ORGANIC SUBSTITUTED SILICON-OXYGEN-ALUMINUM OLIGOMERS

Leonard V. Interrante, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 303,447, Sep. 18, 1981, Pat. No. 4,434,103.
This application Sep. 16, 1983, Ser. No. 532,944
Int. Cl.³ B32B 9/00
U.S. Cl. 428—428 2 Claims

1. Shaped ceramic, metallic, or metallic alloy substrates coated with an aluminosilicate consisting essentially of chemically combined units of the formula,



a has an average of 1 to 4, and b has a value of at least 1.

4,460,655

TiO_2 PIGMENT BEARING A COATING WITH FLUORIDE IONS AND LAMINATE AND COATING BASED THEREON

Howard W. Jacobson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 4, 1983, Ser. No. 481,926
Int. Cl.³ B32B *27/42*; C09C *1/62, 3/00*
U.S. Cl. 428—530 6 Claims

1. A cerium ion-free pigment of rutile TiO_2 particles bearing coatings which comprise alumina, the pigment having associated therewith 0.05–2%, by weight of the TiO_2, of fluoride ions.

3. A paper laminate comprising paper and a pigment according to claim 1 in a rigid matrix.

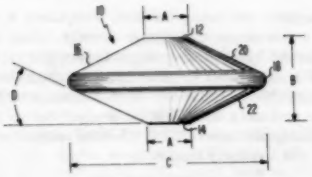
5. A coating composition comprising
(a) pigment according to claim 1,
(b) a film-forming material,
and
(c) a liquid carrier.

4,460,656

VIDEO DISC PREFORM AND METHOD OF MAKING A DISC THEREFROM

Michael L. McNeely, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 15, 1979, Ser. No. 66,769
Int. Cl.³ B32B *1/00*
U.S. Cl. 428—542.8 3 Claims



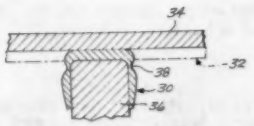
1. A preform for making a recorded disc comprising a solid body of a plastic material having uninterrupted, substantially flat top and bottom surfaces of the same peripheral dimension and a peripheral surface between the top and bottom surfaces, said peripheral surface having a first portion of a peripheral dimension greater than the peripheral dimensions of the top and bottom surfaces and second and third portions extending from said first portion to the top and bottom surfaces respectively, said second and third portions each being conical so as to have a periperal dimension which decreases from that of the first portion to that of the top and bottom surfaces, respectively.

4,460,657

THINNING CONTROL IN SUPERPLASTIC METAL FORMING

Samuel D. Elrod, Seattle, and DeVere V. Lindh, Auburn, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 20, 1981, Ser. No. 245,803
Int. Cl.³ B21D *24/00, 26/00*
U.S. Cl. 428—600 6 Claims



3. An article of manufacture superplastically formed by a process comprising: establishing areas of an essentially flat metal blank that will be subjected to extensive tensile elongation, sculpturing the flat metal blank into steps with the thickest step in an area of the metal blank to be subjected to the greatest elongation, placing the sculptured metal blank in a mold, and superplastically forming a part from the sculptured metal blank.

4,460,658

HOMOGENEOUS LOW MELTING POINT COPPER BASED ALLOYS

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 20, 1982, Ser. No. 420,549
Int. Cl.³ C22C *9/06*; B22D *15/02*
U.S. Cl. 428—606 13 Claims

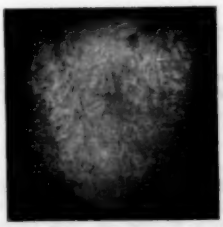
4. A homogeneous brazing foil having a composition consisting essentially of 10 to 52 atom percent nickel, 2 to 10 atom percent tin and 10 to 15 atom percent phosphorus, the balance being copper and incidental impurities and the total of copper, nickel and tin ranging from about 85 to 90 atom percent.

4,460,659

COPPER ALLOY WELDING FILLER AND METHOD OF USE

James R. Pedersen; David M. Parker, and Robert G. Trechel, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 402,889, Jul. 29, 1982. This application Jun. 8, 1983, Ser. No. 501,542
Int. Cl.³ B32B *27/10*
U.S. Cl. 428—675 14 Claims



1. A Method of joining two copper segments together such that the electrical conductivity and the mechanical properties of the joined segments are substantially preserved which comprises:

bringing both copper segments in close proximity to each other;

4,460,660

NEGATIVE HYDROGEN ELECTRODE COMPRISING AN ALLOY PALLADIUM AND RUTHERIUM

Erich F. Kujas, Vincentown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 22, 1982, Ser. No. 452,116
Int. Cl.³ H01M 4/92
U.S. Cl. 429—40 4 Claims

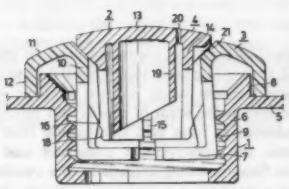
1. An electrode suitable for use in a nickel-hydrogen fuel cell comprising a support structure having thereon an alloy consisting of equal quantities of palladium and ruthenium.

4,460,661

ARRANGEMENT FOR SEALING A STORAGE BATTERY CASING

Ulf A. C. Sköld, Silverdalen, Sweden, assignor to Nordiska Ackumulatorfabriker Noack AB, Stockholm, Sweden

Filed Sep. 17, 1982, Ser. No. 419,459
Claims priority, application Sweden, Sep. 25, 1981, 8105692
Int. Cl.³ H01M 2/12
U.S. Cl. 429—89 12 Claims



1. An arrangement for sealing a storage-battery casing having at least one opening formed in the lid thereof, with the aid of a sealing plug which is retained in a sleeve-like fitting arranged around said opening, wherein the sealing plug comprises a substantially sleeve-like outer plug part and an inner plug part which can be inserted axially into said outer plug part, the outer plug part having a radially expandable portion intended to be received in the fitting, and the inner plug part forming an expander means which, when inserted axially into the outer plug part, expands said expandable portion from a radially compressed state, in which said expandable portion can be displaced axially in its associated fitting, to a radially expanded state, in which the outer plug part is retained in the sleeve-like fitting by engagement of said expandable portion with the radially, inwardly facing side of said fitting.

4,460,662

MOLYBDENUM-COATED ALUMINUM CATHODES FOR ALKALI METAL/SULFUR BATTERY CELLS

Paul A. Damrow, Concord, and Floris Y. Tsang, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 13, 1983, Ser. No. 494,595
Int. Cl.³ H01M 4/36
U.S. Cl. 429—104 16 Claims

1. A shaped article having utility as a cathodic current collector for alkali metal/sulfur battery cells, said article comprising (1) a metal substrate consisting essentially of aluminum or of a predominantly aluminum, aluminum/molybdenum mixture; (2) over said substrate, a first layer at least 100 Å thick and consisting essentially of molybdenum or of a predominantly molybdenum, aluminum/molybdenum mixture; (3) over said first layer, a second layer having the average composition MoO_x, x having a value within the range of from about 2 to about 2.9; and (4) a surface layer, about 25 Å or more thick, consisting essentially of MoO_3.

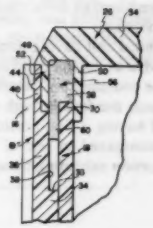
8. An article according to claim 1 in which said first layer is a molybdenum-rich, binary alloy of aluminum and molybdenum.

4,460,663

BATTERY CASING CONSTRUCTION AND METHOD OF MAKING SAME

Ronald J. Stutzbach, Smithfield, and Richard J. B. Pearce, Cumberland, both of R.I., assignors to SAB NIFE AB, Oskarshamn, Sweden

Filed Jan. 7, 1983, Ser. No. 456,530
Int. Cl.³ H01M 6/42, 6/00
U.S. Cl. 429—151 8 Claims



1. A battery casing construction comprising an elongated extruded tubular casing wall member having elongated walls which are substantially straight along the entire extents thereof and made of a substantially rigid plastic material, molded upper and lower collars snugly received on the exterior of said wall member adjacent the upper and lower ends thereof, respectively, molded top and bottom plate elements received in covering relation on the upper and lower ends of said wall member, respectively, said top and bottom plate elements having peripheral channels therein which face downwardly and upwardly, respectively, the upper and lower portions of said wall member being received in the channels in said top and bottom plate elements, respectively, said upper and lower collars and said top and bottom plate elements, respectively, cooperating with the adjacent portions of said wall member to define enclosed bonding areas at the upper and lower ends of said wall member which encompass the outboard portions of the respective channels and extend distances downwardly and upwardly, respectively, along the outer surfaces of said wall member at the upper and lower ends thereof, respectively, the lower extremity of said upper bonding area being defined by said upper collar, the upper extremity of said lower bonding area being defined by said lower collar, and upper and lower bonding means in said upper and lower bonding areas, respectively, adhesively bonding said upper and lower collars and said top and bottom plate elements, respectively, to the outer surfaces of said wall member adjacent the upper and lower ends thereof, respectively.

4,460,664

ELECTROCHEMICAL CELL FOR FACILITATING HERMETICITY LEAKAGE TESTING OF AN ELECTRICAL FEEDTHROUGH

Edsel O. Jurva, Anoka, and Richard L. Goodin, Blaine, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 5, 1981, Ser. No. 308,308
Int. Cl.³ H01M 2/02
U.S. Cl. 429—181 6 Claims

1. An electrical feedthrough for a hermetically sealed container comprising:

a conductive lead having interior and exterior extending portions;

a ferrule carried by the container and having a fixed barrel length and an annular portion surrounding a portion of the lead length;

glass seal means for hermetically supporting the lead in the

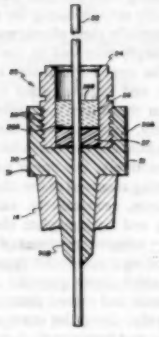
ferrule and insulating the lead therefrom, said seal means having interior and exterior surfaces and filling only a portion of the barrel length of said ferrule leaving an unfilled space within the remaining portion of said ferrule adjacent said interior surface;

gas retaining material body means fitted within said unfilled portion of said ferrule adjacent to the interior surface of said seal means; and

plastic body means molded to the annular portion of said ferrule and to at least a portion of the interior extending portion of said conductive lead for retaining said gas retaining body means positioned within said ferrule adjacent said interior surface and for protecting the interior portion of the feedthrough from contact with the contents of the sealed container.

4. An electrochemical cell having anode and cathode electrode means enclosed in a container and feedthrough extending through a wall of the container for electrically connecting one of the electrode means, the feedthrough comprising:

a conductive lead having a first portion extending into the container and connected to one of the electrode means and a second portion extending away from the container;



a ferrule carried by the container and having a fixed barrel length a portion extending into the container, the ferrule surrounding a further portion of the conductive lead length;

glass seal means for hermetically supporting the lead in the ferrule and insulating the lead therefrom, said seal means having interior and exterior surfaces and filling only a portion of the barrel length of said ferrule leaving an unfilled space within the remaining portion of said ferrule adjacent said interior surface;

gas retaining material body means fitted within said unfilled portion of said ferrule adjacent to the interior surface of said seal means; and

plastic body means molded to the annular portion of said barrel and to at least a portion of the interior extending portion of said conductive lead for retaining said gas retaining body means positioned within said ferrule adjacent said interior surface and for protecting the interior portion of the feedthrough from contact with the cell contents.

4,460,665

OPTICAL INFORMATION RECORDING MEDIUM

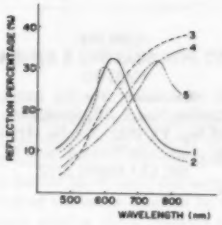
Makoto Kunikane, Chigasaki; Michiharu Abe, and Masaakira Umehara, both of Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1982, Ser. No. 452,238

Claims priority, application Japan, Dec. 28, 1981, 56-209929; Dec. 6, 1982, 57-212663

Int. Cl.³ B32B 3/16; B05D 5/06

U.S. Cl. 428—199 17 Claims



1. An optical information recording medium comprising a substrate and a recording layer superimposed on said substrate, said recording medium being adapted to have information recorded thereon in the form of pits in said recording layer, and being adapted to have said information read by a laser beam, wherein the improvement comprises said recording layer is a thin film consisting essentially of a cyanine dye.

4,460,666

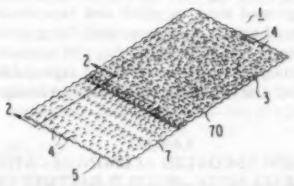
COATED SUBSTRATE, PREPARATION THEREOF, AND USE THEREOF

Leonard R. Dinkler, 1536 NW. 7th Ave., Gainesville, Fla. 32603, and Saverio F. Pensabene, 4204 NW. 19th Pl., Gainesville, Fla. 32605

Filed Nov. 24, 1981, Ser. No. 324,498

Int. Cl.³ H01M 4/80

U.S. Cl. 429—236 2 Claims



1. An electrode for a rechargeable electrochemical cell comprising:

an electrically conductive metallic substrate having two major surfaces and being embossed to provide a substantial plurality of dimples projecting from at least one of said major surfaces and providing a plurality of recesses in the other of said major surfaces, said dimples having a reduced cross-sectional thickness less than the cross-sectional thickness of said substrate, said reduction in cross-sectional area effecting an increase in the surface area of said substrate of up to approximately 20% and thereby providing additional sites at which metallurgical bonding may occur;

a sintered porous nickel coating disposed substantially over each of said major surfaces to provide a coating over each of said major surfaces, said sintered porous nickel coating filling said recesses and being disposed between said dim-

ples, said sintered porous nickel coating sintered and adhered to said dimples by metallurgical bonds between said coating and said dimples at said additional sites; and an electrochemically active material impregnated within the pores of said sintered porous nickel coating.

4,460,667

METHOD FOR DEVELOPING LATENT ELECTROSTATIC IMAGES FOR GAP TRANSFER TO A CARRIER SHEET

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Stamford, Conn.

Division of Ser. No. 267,465, May 27, 1981. This application Oct. 12, 1982, Ser. No. 433,665

Int. Cl.³ G03G *13/10*

U.S. Cl. 430—30 **1 Claim**

1. A method of developing a latent electrostatic image comprising the steps of subjecting the latent image to the action of a developing composition; a metering step and a transfer step in succession; said developing composition comprising dielectric spacer particles and charged toner particles disseminated throughout a dielectric carrier liquid, said spacer particles having a higher dielectric constant than said carrier liquid; said metering step including the step of biasing a metering means to a polarity opposite to the polarity of the charge of said toner particles; said transfer step including spacing a carrier sheet from the developed electrostatic image by said spacer particles and then applying a potential to the back of said carrier sheet of a polarity opposite to the polarity of said toner particles.

4,460,668

ELECTROPHOTOGRAPHIC COPYING METHOD

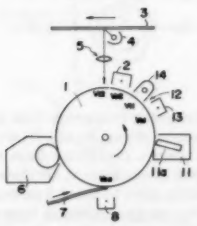
Masazumi Yoshida, Amagasaki; Tadao Noda, Sakai, and Masayoshi Inoue, Itami, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 275,583, Jun. 10, 1981, abandoned, which is a continuation-in-part of Ser. No. 189,005, Sep. 22, 1980, abandoned. This application Jan. 3, 1983, Ser. No. 454,975

Claims priority, application Japan, Oct. 18, 1979, 54-134807; Oct. 19, 1979, 54-135398; Jul. 11, 1980, 55-95310

Int. Cl.³ G03G *13/22*

U.S. Cl. 430—31 **6 Claims**



1. In an electrophotographic copying method suitable for a toner image transfer type copying apparatus in which at least a portion of a photosensitive member is used repeatedly for forming an image of an original to be copied and in which said photosensitive member comprises at least a photoconductive layer formed over a conductive base which is prepared from a dispersion of a photoconductive material including at least cadmium sulfide in a binder resin, the method comprising:

a first step of charging said photosensitive member with a specific charge polarity by the charge imparted to the photosensitive member by the toner image transfer charger means during transfer of the image from the photosensitive member to the copy medium;

a second step of charging said photosensitive member with said specific charge polarity as said first step by a pre-hysteresis charger means;

a third step of exposing said photosensitive member to light by a pre-hysteresis eraser means of substantially no greater than 750 lux sec to sensitize said photosensitive member, said first and second steps of charging being sufficiently high to saturate the degree of sensitization of said photosensitive member;

a fourth step of uniformly charging said photosensitive member with the same charge polarity as said first and second steps by a charging means, and wherein the time for the portion of said photosensitive member sensitized in said third step to reach said fourth step is less than substantially a maximum of 3 seconds;

a fifth step of exposing said photosensitive member to the image to form an electrostatic latent image; and

a sixth step of developing said electrostatic latent image for subsequent transfer thereof.

4,460,669

PHOTOCONDUCTIVE MEMBER WITH α-SI AND C, U OR D AND DOPANT

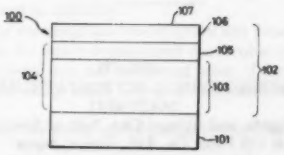
Kyosuke Ogawa, Tokyo; Shigeru Shirai, Yamato; Junichiro Kanbe, Yokohama; Keishi Saitoh, Tokyo, and Yoichi Osato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,656

Claims priority, application Japan, Nov. 26, 1981, 56-190037; Nov. 30, 1981, 56-193200; Dec. 1, 1981, 56-194292

Int. Cl.³ G03G *5/082*

U.S. Cl. 430—57 **52 Claims**



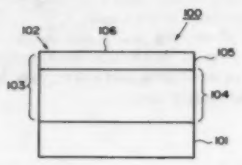
1. A photoconductive member comprising a support for a photoconductive member and an amorphous layer having photoconductivity constituted of an amorphous material comprising silicon atoms as a matrix and at least one of hydrogen atoms and halogen atoms, said amorphous layer having a first layer region containing as the constituent atom at least one kind of atoms selected from the group consisting of oxygen atoms, carbon atoms and nitrogen atoms in a distribution state which is ununiform and continuous in the direction of layer thickness wherein the ununiform distribution is concentrated at the support side and decreases towards the side opposite to the side at which the support is provided and wherein the distribution state is uniform in the direction substantially parallel to surface of said amorphous layer and a second layer region containing atoms belonging to the group III of the periodic table as constituent atoms in a distribution state which is ununiform and continuous in the direction of layer thickness, said first layer region existing internally below the surface of said amorphous layer.

4,460,670

PHOTOCONDUCTIVE MEMBER WITH α-SI AND C, N OR O AND DOPANT

Kyosuke Ogawa, Tokyo; Shigeru Shirai, Yamato; Junichiro Kanbe, Yokohama; Keishi Saitoh, Tokyo, and Yoichi Osato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1982, Ser. No. 443,164
Claims priority, application Japan, Nov. 26, 1981, 56-190038; Nov. 30, 1981, 56-193201; Dec. 1, 1981, 56-194293
Int. Cl.³ G03G 5/082
U.S. Cl. 430—57 52 Claims



1. A photoconductive member, comprising a support for a photoconductive member and an amorphous layer having photoconductivity constituted of an amorphous material comprising silicon atoms as a matrix and at least one of hydrogen atoms and halogen atoms, said amorphous layer having a first layer region containing at least one kind of atoms selected from the group consisting of oxygen atoms, carbon atoms and nitrogen atoms as constituent atoms in a distribution which is ununiform and continuous in the direction of layer thickness, the ununiform distribution being concentrated at the support side and decreasing towards the surface side of the amorphous layer and uniform and continuous substantially parallel to the surface of the amorphous layer and a second layer region containing atoms belonging to the group III of the periodic table as constituent atoms in a distribution which is ununiform and continuous in the direction of layer thickness.

4,460,671

PRESS FIXING TYPE ELECTROSTATIC RECORDING MATERIAL

Tokuro Yasuda, and Akinori Oka, both of Yonago, Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 203,994, Nov. 4, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 428,794
Claims priority, application Japan, Nov. 8, 1979, 54-143886
Int. Cl.³ G03G 13/20, 13/22
U.S. Cl. 430—98 6 Claims

1. A method for forming and fixing toner images on an electrostatic recording material, comprising

forming electrostatic latent images on an electrostatic recording material which comprises a substrate having a low surface resistivity of 10^9 ohms or less and an electrostatic recording resinous layer formed on at least one surface of said substrate and comprising a polyester resin and an anhydrous aluminum silicate which is amorphous or in the form of thin flat plates or thin flakes and which is uniformly mixed with said polyester resin, the ratio in weight of said polyester resin to said anhydrous aluminum silicate being in the range of from 80:20 to 50:50 wherein said electrostatic recording resinous layer is provided with a finely rugged structure on the surface thereof;

developing said latent images with a toner; and

press-fixing the resultant toner images on the surface of said electrostatic recording resinous layer, under pressure.

4,460,672

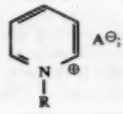
POSITIVELY CHARGED ELECTROSTATIC TONER CONTAINS LOW MOLECULAR WEIGHT WAXY MATERIAL AND PYRIDINIUM HALIDE OR ORGANIC SULFONATE

Robert J. Gruber, Pittsford; Paul C. Julien, Webster; Steven B. Bolte, and Ronald J. Koch, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

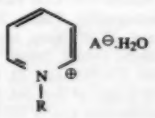
Filed Oct. 14, 1982, Ser. No. 434,198
Int. Cl.³ G03G 9/10
U.S. Cl. 430—110 23 Claims

1. An improved positively charged dry electrostatic toner composition useful in imaging systems containing no silicone oil release fluids and wherein their results no offsetting of the resulting images consisting of a single phase toner resin particles selected from the group consisting of polymers of styrene methacrylates, styrene acrylates, polyesters, and styrene butadienes, pigment particles, a low molecular weight waxy material having a molecular weight of from 500 to about 20,000, and from about 0.5 percent to about 10 percent by weight of a charge enhancing additive selected from the group consisting of alkyl pyridinium halides, organic sulfonate compositions and organic sulfate compositions, of the following formulas:

I.

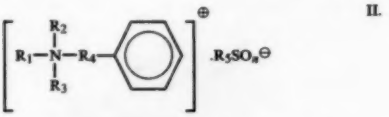


and



wherein R is a hydrocarbon group containing from about 8 to about 22 carbon atoms, and A is an anion, and

II.



wherein R_1 is an alkyl group containing from about 12 carbon atoms to about 22 carbon atoms, R_2 and R_3 are independently selected from alkyl groups containing from about 1 carbon atom to about 5 carbon atoms, R_4 is an alkylene group containing from about 1 carbon atom to about 5 carbon atoms, R_5 is a tolyl group or an alkyl group containing from about 1 carbon atom to about 3 carbon atoms, and n is the number 3 or 4.

4,460,673

METHOD OF PRODUCING AMORPHOUS SILICON LAYER AND ITS MANUFACTURING APPARATUS

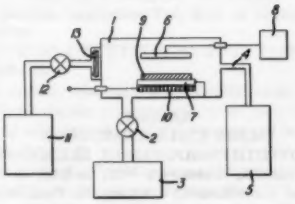
Kunio Sukigara, and Toyoki Kazama, both of Yokosuka, Japan, assignors to Fuji Electric Company, Ltd., Kawasaki, Japan

Filed May 27, 1982, Ser. No. 382,475
Claims priority, application Japan, Jun. 3, 1981, 56-85505; Sep. 24, 1981, 56-150949
Int. Cl.³ G03G 5/082; B05D 3/06
U.S. Cl. 430—128 10 Claims

1. A method for producing an amorphous silicon layer comprising the steps of: introducing a reaction gas composed mainly of silicon hydride into a reaction chamber, exhausting the reaction chamber; generating a plasma within the reaction

chamber to decompose the reaction gas therein and to deposit an amorphous silicon layer on a substrate situated within the reaction chamber; and removing hydrogen generated by the decomposition of the reaction gas within the reaction chamber.

2. A method for producing an amorphous silicon layer according to claim 1 further comprising the steps of polymerizing silicon hydride of a lower order to produce a silicon hydride of a higher order and removing hydrogen generated by such polymerization and wherein the silicon hydride of the higher order is introduced into the reaction chamber after removal of such hydrogen.



5. A method of producing an amorphous silicon layer according to claim 2, wherein an amorphous silicon layer to be produced is a photosensitive layer used for photosensitive film for electrophotography.

4,460,674

POSI-TYPE QUINONE DIAZIDE PHOTOSENSITIVE COMPOSITION WITH SENSITIZER THEREFOR

Masafumi Uehara; Takeshi Yamamoto; Atsuo Yamazaki, and Tohru Aoki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

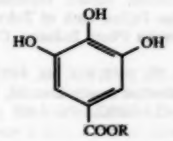
Filed Jan. 4, 1982, Ser. No. 336,861

Claims priority, application Japan, Jan. 16, 1981, 56-3778; Jan. 16, 1981, 56-3779

Int. Cl.³ G03C 1/60, 1/54

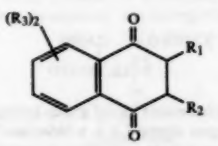
U.S. Cl. 430—190 **18 Claims**

1. A posi-type photosensitive composition, comprising 10 to 50% by weight of a quinonediazide posi-type photosensitive compound and 0.5 to 20% by weight of at least one sensitizer represented by formula (I) or (II):



(I)

wherein R is selected from the group consisting of a hydrogen atom, an alkyl group, an aralkyl group, an aryl group, a substituted aryl group, a cycloalkyl group, and an alkali metal atom;



(II)

wherein each of R_1, R_2 and R_3 is selected from the group consisting of a hydrogen atom, an alkyl group, an alkoxy group, an aryl group, a substituted aryl group, an acyl group, a halogen atom, a nitro group and a hydroxyl group and wherein said R_3 groups may be either identical or different groups.

4,460,675

PROCESS FOR PREPARING AN OVERCOATED PHOTOPOLYMER PRINTING PLATE

Robert R. Gruetzmacher, Chadds Ford, Pa., and Stanley H. Munger, Rumson, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 341,250, Jan. 21, 1982, Pat. No. 4,427,759. This application Oct. 27, 1983, Ser. No. 546,154

Int. Cl.³ G03C 5/00

U.S. Cl. 430—300 **19 Claims**

1. A process for preparing a flexographic printing plate which comprises

(1) exposing to actinic radiation through an image a flexographic photopolymerizable element prepared by passing into the nip of a calender a mass of a hot photopolymerizable composition comprising an elastomeric binder, an ethylenically unsaturated compound having at least one terminal ethylenic group, and a photoinitiator or photoinitiator system, and, while hot, calendering the photopolymerizable composition between a support and a multilayer cover element to form a photopolymerizable layer therebetween, wherein the multilayer cover element consists essentially of a flexible cover film and a layer of an elastomeric composition and optionally between the flexible cover film and the layer of elastomeric composition a flexible polymeric film, the layer of elastomeric composition being adjacent to the photopolymerizable layer and being photosensitive or becoming photosensitive during or after calendering by contact with the photopolymerizable layer, said layer of elastomeric composition comprising an elastomeric polymeric binder and optionally a second polymeric binder and a nonmigratory dye or pigment and, in addition, when said layer of elastomeric composition is photosensitive one or more ethylenically unsaturated monomeric compounds and/or photoinitiator or initiator system, the cover film of said photopolymerizable element optionally has been removed after calendering but prior to exposure,

(2) removing the image and cover film if still present, and

(3) removing by liquid development the flexible polymeric film, if present, and the unexposed areas of the layer of elastomeric composition and photopolymerizable layer; and

(4) optionally removing any residual liquid developer by drying.

4,460,676

NON-IMPACT SINGLE AND MULTI-PLY PRINTING METHOD AND APPARATUS

Warren M. Fabel, Peters La., Pound Ridge, N.Y. 10576

Filed Feb. 21, 1980, Ser. No. 123,344

Int. Cl.³ G03C 5/24

U.S. Cl. 430—333 **6 Claims**

1. A method of simultaneous non-impact printing of individual plies of a multi-ply business form assembly, wherein the individual plies are substantially opaque and have portions thereof provided or treated with non-optical electromagnetic-radiation responsive, color changing imaging material, the method including the steps of advancing said business form assembly to a printing station; and selectively exposing said treated portions of said plies to non-optical electromagnetic radiation supplied by an arrangement consisting of a plurality of radiators for selectively directing said non-optical electromagnetic radiation, whereby multiple images are simultaneously non-impact printed on said treated portions of said plies.

4,460,677

VISIBLE LIGHT SENSITIVE, THERMALLY DEVELOPABLE IMAGING SYSTEMS

George H. Smith, St. Paul, and Peter M. Olofson, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 247,834, Mar. 26, 1981, Pat. No. 4,386,154. This application Nov. 8, 1982, Ser. No. 439,848

Int. Cl.³ G03C 5/24, 1/52

U.S. Cl. 430—336 20 Claims

1. An imageable layer comprising a binder, at least one leuco dye selected from an acylated azine, phenoxazine, or phenothiazine leuco dye, nitrate ion, a photoinitiator comprising organic compounds with photolyzable halogen atoms, and a visible light sensitizing dye for said photoinitiator.

4,460,678

TELLURIUM IMAGING COMPOSITION INCLUDING IMPROVED REDUCTANT PRECURSOR AND METHOD

Terry T. Yu, Mt. Clemens, and Mei-Rong Yen, Troy, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jun. 28, 1982, Ser. No. 392,586

Int. Cl.³ G03C 5/24

U.S. Cl. 430—346 39 Claims

1. A film for forming an image comprising a composition on a substrate, which composition comprises:

(a) an image forming tellurium compound;

(b) a reductant precursor which will abstract labile hydrogen from a labile hydrogen source under the influence of imaging energy to become a reducing agent with respect to the image forming tellurium compound, said reductant precursor selected from the group consisting of 3-chloro-2-isopropoxy-1,4-naphthoquinone, 2-isopropoxy-1,4-anthraquinone, 3-chloro-2-isopropoxy-1,4-anthraquinone, 3-chloro-2-(3'-pentoxy)-1,4-naphthoquinone, 3-chloro-2-(2'-butoxy)-1,4-naphtoquinone, 3-chloro-2-(3',3'-dimethyl-2'-butoxy)-1,4-naphtoquinone and 2,3-diisopropoxy-1,4-naphthoquinone;

(c) a source of labile hydrogen for reaction with said reductant precursor; and

(d) a matrix in which said tellurium compound, reductant precursor and source of labile hydrogen are combined in amounts effective which may be applied to a substrate

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4,460,679

LOW COATING WEIGHT SILVER HALIDE ELEMENT

Frank L. Schadt, III, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 15, 1983, Ser. No. 514,174

Int. Cl.³ G03C 5/24, 1/00, 1/76

U.S. Cl. 430—409 5 Claims

1. A photographic element comprising, in, order, (1) a support, (2) a nonphotosensitive layer on said support containing a chemically bleachable, high strength tinctorial colorant, and (3) at least one photosensitive silver halide emulsion layer, characterized by the interposition of a timing layer between layers (2) and (3) and the addition of a hardener to layer (2).

4,460,680

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masashi Ogawa; Kunio Ishigaki; Nobuyuki Iwasaki, and Taku Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 25, 1982, Ser. No. 411,384

Claims priority, application Japan, Aug. 25, 1981, 56-132900

Int. Cl.³ G03C 1/30

U.S. Cl. 430—434 18 Claims

1. A silver halide photographic light-sensitive material which does not cause reticulation due to high temperature treatment and has a good scum inhibition property as well as a high covering power, said material comprises a support having thereon at least one light-sensitive silver halide gelatin emulsion layer which is hardened by a hardening agent and a light-sensitive gelatin uppermost layer, wherein the light-sensitive gelatin uppermost layer is hardened by a polymeric diffusion resistant hardening agent so as to have a melting time longer than that of the light-sensitive silver halide gelatin emulsion layer and wherein the thickness of the light-insensitive uppermost layer is from 1.3 μm to 5.0 μm.

4,460,681

IMAGE ENHANCEMENT OF PHOTOTHERMOGRAPHIC ELEMENTS

Robert A. Frenchik, Sommerset, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 15, 1983, Ser. No. 475,441

Int. Cl.³ G03C 1/72, 1/46, 1/00

U.S. Cl. 430—502 16 Claims

1. A color photothermographic imageable article comprising a substrate, a photothermographic emulsion layer, an organic solvent soluble barrier layer, a second photothermographic emulsion layer and a polymeric cover layer, wherein each of the photothermographic layers comprise a reducible silver source, photosensitive silver halide, a reducing agent for silver ion and solvent soluble binder, and further wherein each photothermographic layer is sensitized to a portion of the spectrum at least 60 nm different from the other photothermographic layer, and each photothermographic layer contains a leuco dye which when oxidized forms a feasible dye having a maximum absorbance at least 60 nm different from that of the dye formed in the at least one other photosensitive layer, and the barrier layer is between said photothermographic layers and is impermeable to the solvent contained in the second photothermographic layer.

4,460,682

SILVER HALIDE PHOTOGRAPHIC ELEMENT

Noboru Mizukura, Tsukui; Satoru Ikeuchi, Hino; Shunji Suginaka, and Noriko Fujita, both of Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1982, Ser. No. 449,849

Claims priority, application Japan, Dec. 19, 1981, 56-205525

Int. Cl.³ G03C 1/06, 1/48

U.S. Cl. 430—559 12 Claims

1. A silver halide photographic element containing a non-diffusible, ligand exchange active complex which when reduced under alkaline conditions becomes active for ligand exchange to release a diffusible, photographically useful material, said ligand exchange active complex having the formula:

$$[\underset{\text{BALL}}{\text{Co(III)}}\ (\text{La})\ \ \underset{\text{PHOTO}}{(\text{Lb})}]\text{Yr}$$

wherein La is a quadridentate ligand group having at least two coordinatable nitrogen atoms; Lb is a bidentate ligand group selected from among oxygen and nitrogen atoms; BALL is a ballast group; PHOTO is a photographically useful material group; Y is a counter ion; and r is the number of counter ions necessary for neutralizing the electric charge on the Co(III) complex.

4,460,683

SOLUBLE LIVER URICASE WITH A PROCESS FOR THE PREPARATION THEREOF AND WITH THE USE THEREOF

Manfred Gloger, Weilheim; Josef Heinle, Munich, and Helmut Schlumberger, Polling, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jul. 2, 1982, Ser. No. 394,562

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1981, 3126759

Int. Cl.³ C12Q *1/62;* C12N *11/02, 11/10, 11/08, 11/06*

U.S. Cl. 435—10 8 Claims

1. Liver uricase, wherein it is covalently bound to a water-soluble polysaccharide, polyacid anhydride, polyvinylpyrrolidone or acid anhydride as carrier substance and is still soluble at pH values below 6.

8. A process for the determination of uric acid, wherein use is made of a liver uricase according to claim 1.

4,460,684

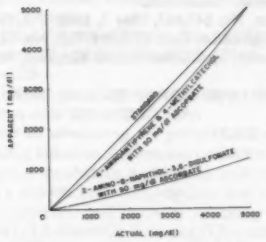
ASCORBATE-RESISTANT BROAD RANGE GLUCOSE TEST COMPOSITION, TEST DEVICE AND METHOD

Robert Bauer, Bristol, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 2, 1982, Ser. No. 404,445

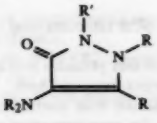
Int. Cl.³ C12Q *1/28, 1/54;* G01N *33/66*

U.S. Cl. 435—14 7 Claims

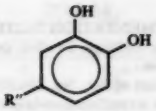


1. A composition for detecting the presence of glucose, determining the concentration of glucose, or both, in a test sample, whereby the composition is capable of determining concentration over a range of 0 to about 5000 milligrams of glucose per deciliter of test sample, and whereby the composition is resistant to interference from the presence of ascorbate in the sample,

the composition comprising glucose oxidase, peroxidase and, as an indicator capable of producing a detectable response in the presence of peroxidase and H_2O_2, a mixture of two compounds, one having the structure



and the other having the structure



in which R, same or different is H or lower alkyl, R' is aryl and R'' is lower alkyl.

4,460,685

METHOD OF ENHANCING THE PRODUCTION OF HUMAN γ INTERFERON

Jan T. Vilcek, New York, and Yum K. Yip, Forest Hills, both of N.Y., assignors to New York University, New York, N.Y.

Continuation-in-part of Ser. No. 154,310, May 29, 1980, abandoned. This application Apr. 17, 1981, Ser. No. 255,257

Int. Cl.³ C12P *21/02, 19/34;* C12N *15/00, 1/38*

U.S. Cl. 435—70 32 Claims

1. In the production of human IFN-γ from IFN-γ-producing leukocyte cells:

the improvement of stimulating IFN-γ production by contacting said cells with an effective IFN-γ-production-stimulating amount of at least one IFN-γ stimulating diterpene compound and thereafter isolating IFN-γ.

26. A method of producing mRNA for IFN-γ, comprising:

(a) forming a culture of IFN-γ producing leukocyte cells;

(b) adding an IFN-stimulating diterpene compound to said culture in an effective amount for enhancing cellular elaboration of IFN-γ;

(c) optionally adding an IFN-γ inducer to said culture;

(d) incubating said cells under conditions conducive to IFN-γ production;

(e) extracting RNA from said culture;

(f) purifying said RNA to produce a fraction enriched in mRNA for IFN-γ.

4,460,686

GLUCOSE OXIDATION WITH IMMOBILIZED GLUCOSE OXIDASE-CATALASE

Winfried Hartmeier, Ingelheim am Rhein, Fed. Rep. of Germany, assignor to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 126,033, Feb. 29, 1980, abandoned. This application Apr. 29, 1982, Ser. No. 373,291

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911192

Int. Cl.³ C12P *7/58;* C12N *11/18, 11/02*

U.S. Cl. 435—137 1 Claim

1. A process for enzymatic oxidation of glucose with an immobilized glycose oxidase-catalase composition, which comprises performing the oxidation at a temperature of 2±1° C. in a reaction medium with an immobilized glucose oxidase-catalase composition consising essentially of glucose oxidase and catalase bound to hardened gelatin with a particle size of 10 to 100 μm, said composition having catalase activity expressed in Baker units at least one-sixth of the glucose oxidase activity expressed in Sarett units and said composition being present in an amount sufficient to provide 500 to 5000 sarett units of glucose oxidase and 200–2000 Baker units of calatase per liter of reaction medium.

4,460,687

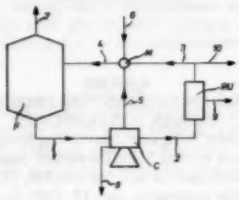
FERMENTATION METHOD

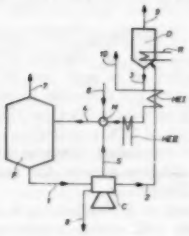
Lars K. J. Ehnström, Tullinge, Sweden, assignor to Alfa Laval AB, Tumba, Sweden

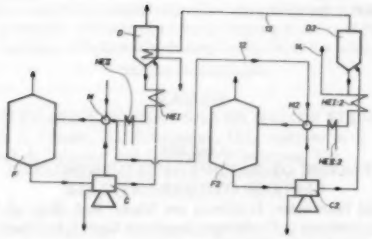
Continuation-in-part of Ser. No. 246,305, Mar. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 3,939, Jan. 16, 1979, abandoned. This application Sep. 14, 1983, Ser. No. 532,042

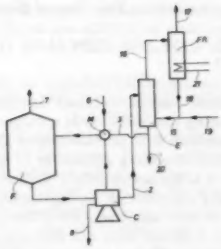
Int. Cl.³ C12P 7/06

U.S. Cl. 435—161 10 Claims









1. In the production of ethanol by the continuous fermentation of a carbohydrate containing substrate at about atmospheric pressure in a continuous process circuit comprising a fermentor in which an amount of active yeast cells sufficient to achieve an ethanol productivity in the range of 5–20 kg/h ethanol per cubic meter of fermentor liquid volume is maintained by continuous yeast recirculation, the improvement which consists essentially of continuously charging into said process circuit a feed stream containing at least 18% by weight of yeast-fermentable carbohydrates, having a concentration and flow rate sufficient to supply yeast fermentable carbohydrates in accordance with said ethanol productivity to maintain a steady state concentration of fermentable substance in the fermentor at less than 2% by weight, continuously withdrawing a stream of fermentation liquor from the fermentor at a flow rate sufficeint to maintain a steady state ethanol concentration in the fermentor in the range of 3–7% weight, continuously separating said stream of fermentation liquor, in a centrifugal separation step, into at least one continuous yeast concentrate stream and an essentially yeast-free stream, continuously returning said yeast concentrate stream to the fermentor, continuously separating said yeast-free stream into an ethanol-enriched stream, and a residual stream, continuously discharging said ethanol enriched stream from the circuit, continuously discharging part of said residual stream from the circuit in an amount sufficient to balance the amount of non fermentable substances charged to the circuit, heating the remaining part of said residual stream to at least about 60° C. and continuously recirculating said heated part of said residual stream to the fermentor.

4,460,688

PLASMID AND ITS USE

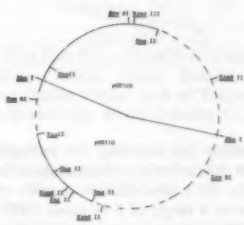
Johan P. M. Sanders, Delft, Netherlands, and Andrew J. P. Docherty, Bristol, England, assignors to Gist Brocades NV, Wateringseweg, Netherlands

Division of Ser. No. 147,483, May 7, 1980, Pat. No. 4,430,434. This application Dec. 21, 1981, Ser. No. 332,958

Claims priority, application United Kingdom, May 11, 1979, 7916377

Int. Cl.³ C12N 15/00; C12P 21/00, 21/02, 19/34; C12N 1/20, 1/00; C12R 1/125

U.S. Cl. 435—172.3 13 Claims



1. A process for preparing a plasmid which confers resistance to streptomycin (Sm^R) and neomycin (Neo^R) upon a Bacillus host and which after having taken up a foreign DNA fragment at one of its restriction sites with loss of its Sm^R or Neo^R phenotype but not both, is still capable of replicating and expressing genetic information in its host comprising

preparing plasmid pUB 109 conferring resistance to streptomycin, (Sm^R),

preparing plasmid pUB 110 conferring resistance to neomycin, (Neo^R),

introducing each of said plasmids into a Bacillus host,

isolating said plasmids from said host,

restricting said plasmids with restriction enzyme Xba I not interfering with the gene properties as to Sm^R and Neo^R of the starting plasmids

recombining the restricted plasmids and

isolating the recombined plasmid conferring Sm^R and Neo^R.

4,460,689

DNA CLONING VECTOR TG1, DERIVATIVES, AND PROCESSES OF MAKING

Forrest Foor, New York, N.Y., and Nancy R. Morin, Cranford, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 368,551, Apr. 15, 1982, abandoned. This application Mar. 8, 1983, Ser. No. 471,394

Int. Cl.[3] C12N *15/00, 7/00, 7/02, 1/00, 1/20;* C12P *21/00;* C12R *1/465*

U.S. Cl. 435—172 26 Claims

1. An isolated vector consisting essentially of TG1 prophage, or its respective genome.

4,460,690

STIMULATION OF VIRAL GROWTH RATE

Kelvin K. Ogilvie, Candiac, Canada, assignor to ens Bio Logicals inc., Toronto, Canada

Filed Feb. 18, 1983, Ser. No. 467,900

Int. Cl.[3] C12N *7/00;* C07D *473/00*

U.S. Cl. 435—235 4 Claims

1. 9-[1-(1,3-diacetoxy-2-propoxy)-2-acetoxy]ethylguanine, or acid addition salts thereof.

3. A process of stimulating the growth and replication of viruses including influenza A virus and coxsackievirus CVB 3, which comprises incubating mammalian cells infected with said virus in a growth promoting medium and under growth promoting conditions, said medium including an effective amount of 9-[1-(1,3-diacetoxy-2-propoxy)-2-acetoxy]ethylguanine or an acid addition salt thereof.

4. A process of making 9-[1-(1,3-diacetoxy-2-propoxy)-2-acetoxy]ethylguanine, which comprises reacting 9-[1-(1,3-dihydroxy-2-propoxy)-2-hydroxy]ethylguanine with an acetylating reagent selected from acetic anhydride or an acetyl halide.

4,460,691

STREPTOMYCES PLASMID PROPHAGE PUC13

Shiau-Ta Chung, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 278,784, Jun. 29, 1981, abandoned. This application Aug. 10, 1981, Ser. No. 291,726

Int. Cl.[3] C12N *1/20, 1/00;* C12R *1/54;* C12N *7/00;* C12P *21/00;* C12N *15/00, 7/02*

U.S. Cl. 435—235 10 Claims

2. Biologically pure plasmid prophage pUC13, which has the following characteristics:

(a) molecular weight of 50.4±2.6 megadaltons

(b) 3–5 copies per cell;

(c) sensitivities to restriction endonucleases as follows:

Enzyme	pUC13	Enzyme	pUC13
BamH I	≧15	Hind III	2
EcoR I	0	Kpn I	≧15
Pst I	≧18	Xho I	≧15
Xba I	2	Sma I	≧15
Bgl II	5	Bcl I	7

and,

(d) when transformed into plasmid cured Streptomyces cultures gives plaques on the transformation plates.

3. Biologically pure actinophage obtained from pUC13 designated ϕSF1, which has the following characteristics:

(a) linear form;

(b) molecular weight of $55.7\pm1.8\times10^6$;

(c) restriction enzyme cleavage pattern identical to that of pUC13;

(d) has a polyhedral head and a long tail with a terminal structure which measure as follows:

head length—93.7±4.5 nm;

head width—86.9±3.2 nm;

tail length—257.8±5.2 nm;

tail width—8 to 10 nm;

(e) the ability to transduce auxotrophic markers; and,

(f) the ability to be maintained in its host as a plasmid and be transferred readily from host to host as a bacteriophage.

4,460,692

MICROEMULSION OF NUTRIENT SUBSTANCES

Jacques Tellier, Lons; Andreé Sirvins, Pau; Jean-Claude Gautier, and Bernard Tramier, both of Billére, France, assignors to Societe Nationale Elf Aquitaine (Production), France

Division of Ser. No. 302,961, Sep. 17, 1981, Pat. No. 4,401,762. This application Mar. 3, 1983, Ser. No. 471,768

Claims priority, application France, Sep. 19, 1980, 80 20178; Sep. 1, 1981, 81 16626

Int. Cl.[3] C12N *1/00*

U.S. Cl. 435—243 20 Claims

1. A nutrient liquid composition intended to be added to a hydrophobic medium for the culture of microorganisms therein comprising a microemulsion of an aqueous solution of nutrient material in a liquid immiscible with water, the aqueous solution being the internal phase of the microemulsion, said microemulsion comprising by weight 10–30% of water, 4–10% of microorganism assimilable nitrogen in the form of nitrogenous compounds, 5–35% of a 10–18 carbon atom alkyl or alkenyl phosphate or an epoxylated phenol alkyl phosphate, 0–20% of an alkyl ether of an alkylene glycol and 20–50% of a fatty acid ester, acid or alcohol or mixture thereof with a petroleum derivative hydrocarbon.

4,460,693

PLASMIDS DERIVED FROM ACTINOMYCETES

Hiromi Toyama; Chuhei Nojiri; Takashi Shomura, and Yujiro Yamada, all of Kanagawa, Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

Filed May 17, 1982, Ser. No. 379,207

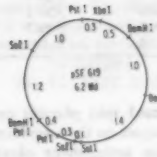
Claims priority, application Japan, May 15, 1981, 56-72185

Int. Cl.[3] C12N *1/00, 15/00*

U.S. Cl. 435—317 4 Claims

1. An isolated essentially pure plasmid derived from Actino-

mycetes having at least one restriction cleavage site for specific restriction enzymes and a molecular weight of less than



1.0×10^7, wherein said plasmid is selected from the group consisting of pSF765, pSF619 and pSF689.

4,460,694

BOVINE GLYCOPROTEINS AND USE IN DIAGNOSING INFECTIOUS MONONUCLEOSIS

Mary A. Fletcher, Miami, Fla., assignor to University of Miami, Coral Gables, Fla.

Continuation-in-part of Ser. No. 247,934, Mar. 26, 1981. This application Mar. 9, 1982, Ser. No. 356,348

Int. Cl.³ G01N *33/54, 33/56;* **C07G** *7/00*

U.S. Cl. 436—531 **25 Claims**

1. A bovine glycoprotein, the amino acid composition of which is in the order of about 7.2 mole % aspartic acid, about 8 mole % threonine, about 7.2 mole % serine, about 16.5 mole glutamic acid, about 12.9 mole % proline, about 8.9 mole % glycine, about 5.6 mole % alanine, about 5.4 mole % valine, about 1.2 mole % methionine, about 6.4 mole % isoleucine, about 9.2 mole % leucine, about 0.9 mole % tyrosine, about 2.8 mole % phenylalanine about 1.3 mole % histidine, about 1.8 mole % lysine and about 4.8 mole % arginine.

17. A bovine glycoprotein according to claim 1 containing essentially no glycolipid and having a carbohydrate content of approximately 25 weight percent, comprising hexose, sialic acid, N-acetylgalactosamine and N-acetylglucosamine in the approximate molar ratio of 1.6:1.0:0.5:1.1, further characterized by a protein content of approximately 75 weight percent and by its ability to give essentially a single band upon polyacrylamide gel electrophoresis when stained with Coomassie blue or with periodic acid modified Schiff reagent.

19. A process for diagnosing infectious mononucleosis which comprises the steps of,

(a) appending to minute particles of latex or synthetic resin the bovine glycoprotein of claim 17;

(b) coating a flat surface with particles from step (a) hereof;

(c) adding a diluted sample of biological test fluid from a patient suspected of harboring infectious mononucleosis, rotating the flat surface;

(d) observing the degree of agglutination of the sample and,

(e) comparing the result of step (d) with the degree of agglutination observed when a standard containing a known amount of infectious mononucleosis heterophile antibody is substituted as the sample in step (c) of the procedure recited in steps (a) through (d).

4,460,695

METHOD FOR THE REMOVAL OF INTERFERING SUBSTANCES, INCLUDING CAFFEINE, IN THEOPHYLLINE ASSAYS

Johanne C. Dickinson, and William A. Frey, both of Wilmington, Del., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Dec. 24, 1981, Ser. No. 334,165

Int. Cl.³ G01N *31/06, 33/50, 33/54*

U.S. Cl. 436—533 **9 Claims**

1. A method for producing a substantially completely caffeine-free biological sample from body fluid containing at least theophylline and caffeine comprising the steps of

(A) introducing body fluid onto a column containing water-insoluble, hydrophobic, macrorecticular resin having a particle size range of 40–500 μm and a surface area range of 300–400 m^2/g and which has been preactivated with protic solvent; and

(B) eluting by isocratic aqueous elution the biological sample containing at least 90% of the theophylline and less than 15% of the caffeine originally in the body fluid.

8. A method for measuring theophylline content of a biological sample comprising the steps of

(A) introducing body fluid onto a column containing water-insoluble, hydrophobic, macrorecticular resin having a particle size range of 40–500 μm and a surface area range of 300–400 m^2/g and which has been preactivated with protic solvent;

(B) eluting by isocratic aqueous elution the biological sample containing at least 90% of the theophylline and less than 15% of the caffeine originally in the body fluid; and

(C) measuring theophylline content in an immunoassay.

4,460,696

ACID-SOLUBLE GLASS FOR MAKING FLEXIBLE OPTICAL FIBER BUNDLE

Yuho Harada, Ohmiya, and Shigeo Kuwayama, Odawara, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Oct. 27, 1982, Ser. No. 436,994

Claims priority, application Japan, Oct. 28, 1981, 56-172414

Int. Cl.³ C03C *13/00*

U.S. Cl. 501—37 **5 Claims**

1. An acid-soluble glass for manufacturing a flexible fiber optical bundle consisting essentially of the following composition:

20.0 mol % $<SiO_2<$ 48.0 mol %

25.0 mol % $<B_2O_3<$ 50.0 mol %

5.0 mol % $\leqq BaO \leqq$ 6.0 mol %

7.0 mol % $<Na_2O$, K_2O, or Li_2O, or total of the two or more thereof $<$ 18.0 mol %

71.0 mol % $<SiO_2+B_2O_3+BaO<$ 80.0 mol %

7.4 mol % $<ZnO<$ 12.0 mol %

1.8 mol % $<Al_2O_3<$ 7 mol %.

4,460,697

PROCESS FOR PRODUCING NON-OXIDE POWDERS

Hisao Hara, and Hirohide Yamada, both of Kumagaya, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,780

Claims priority, application Japan, May 22, 1981, 56-77818

Int. Cl.³ C04B *35/56, 35/58*

U.S. Cl. 501—87 **15 Claims**

1. A process for producing non-oxide powders, which comprises rapidly cooling a molten oxide to produce a brittle oxide material, reducing the oxide material in a reducing atmosphere, and after or concurrently with the reduction, subjecting the resulting reduced powder to heat treatment in a carbon-containing atmosphere, a nitrogen-containing atmosphere, a carbon and nitrogen-containing atmosphere, or a boron-containing atmosphere to obtain non-oxide powder of a carbide, a nitride, a carbide/nitride or a boride, respectively.

4,460,698

HYDROCARBON CONVERSION CATALYST

Albert L. Hensley, Jr., Munster, Ind.; Jeffrey T. Miller, Naperville, Ill.; Thomas D. Nevitt, Naperville, Ill., and A. Martin Tait, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 13, 1981, Ser. No. 320,866

Int. Cl.³ B01J *29/10, 29/16, 27/18*

U.S. Cl. 502—66 **20 Claims**

1. A catalytic composition comprising (1) an active metallic component comprising at least one metal having hydrocarbon conversion activity and at least one oxygenated phosphorus

component, and (2) a support component comprising at least one non-zeolitic, porous refractory inorganic oxide matrix component and at least one crystalline molecular sieve zeolite component comprising a crystalline borosilicate zeolite or a crystalline aluminosilicate zeolite selected from the group consisting of ultrastable Y crystalline aluminosilicate zeolites and Y crystalline aluminosilicate zeolites in acid form or mixtures thereof.

4,460,699

FIXED BED CATALYST FOR OXYCHLORINATION

Ronald J. Convers, and Robert M. Owens, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Aug. 4, 1982, Ser. No. 405,133

Int. Cl.³ B01J *23/02, 23/34, 23/72, 23/74*

U.S. Cl. 502—84 **9 Claims**

1. A structured catalyst for oxychlorination of ethylene, alpha olefins, and aromatics, comprising:

(a) an impeded center which prevents oxychlorination reactions by the exclusion of active catalytic sites said impeded center having a porosity such that substantially all of the pores are greater than about 150 Angstroms in diameter;

(b) a layer of catalyst carrier material disposed on the impeded center of (a) in a thickness of from about 0.001 millimeters to about 1 millimeter, said catalyst carrier material which has, when dry and prior to placement on the center, a specific surface area of from about 50 to about 300 square meters per gram, and

(c) an oxychlorination agent in a range of from about 0.01 to about 20 percent by weight of the total finished catalyst supported by (b).

4,460,700

DRYING PROCESS AND PRODUCT

John P. Candlin, Aston; John W. Kelland, Stopsley, and Peter L. Law, Great Shelford, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Mar. 11, 1981, Ser. No. 242,527

Claims priority, application United Kingdom, Mar. 24, 1980, 8009838; Feb. 18, 1981, 8105020

Int. Cl.³ C08F *2/34, 4/02, 10/02*

U.S. Cl. 502—104 **15 Claims**

1. A process for the preparation of a solid particulate material containing a compound of a transition metal which comprises forming a suspension from an inert liquid medium and particles of at least one solid material, wherein the solid material is, or contains, a titanium halide selected from the group consisting of titanium trichloride, a solid titanium trichloride-containing material and a product of contacting titanium tetrachloride with a support which is silica, aluminia, magnesia, a mixture of complex of two or more thereof, or magnesium chloride, spray-drying the suspension and collecting a spray-dried solid material.

4,460,701

PROCESS FOR THE PREPARATION OF CATALYST COMPONENT FOR THE POLYMERIZATION OF OLEFINS

Minoru Terano, Chigasaki; Kouhei Kimura, Kanagawa; Atsushi Murai, Chigasaki; Masuo Inoue, Chigasaki, and Katsuyoshi Miyoshi, Chigasaki, all of Japan, assignors to Toho Titanium Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1983, Ser. No. 482,059

Claims priority, application Japan, Nov. 17, 1982, 57-200454

Int. Cl.³ C08F *4/02, 4/64*

U.S. Cl. 502—104 **15 Claims**

1. A process for the preparation of catalyst component for the polymerization of olefins which comprises suspending (a) a fatty acid salt of magnesium and (b) dialkoxymagnesium into (c) a liquid halogenated hydrocarbon to form a first suspension, and adding said first suspension to (d) a titanium halide of the general formula: TiX_4, wherein X represents a halogen atom, to be contacted for reaction to form a first reaction mixture, (e) an electron donor compound being present in at least one of the first suspension, the titanium halide and the first reaction mixture; or suspending the dialkoxymagnesium into the liquid halogenated hydrocarbon to form a second suspension, and adding said second suspension to a mixture of the titanium halide and the fatty acid salt of magnesium to be contacted for reaction to form a second reaction mixture, the electron donor compound being present in at least one of the second suspension, the mixture of the titanium halide and the fatty acid salt of magnesium, and the second reaction mixture.

4,460,702

CATALYST PRECURSOR

William E. Smith, Schenectady, N.Y., assignor to General Electric Company, Selkirk, N.Y.

Continuation of Ser. No. 309,355, Oct. 7, 1981, which is a continuation-in-part of Ser. No. 182,679, Aug. 29, 1980. This application Sep. 30, 1982, Ser. No. 429,713

Int. Cl.³ B01J *23/02, 23/34, 31/02*

U.S. Cl. 502—150 **8 Claims**

1. A catalyst precursor capable of being calcined to form an active catalyst, said catalyst precursor formed by

(a) providing a mixture comprising a slurry of a magnesium-containing compound in water and a manganese-containing compound;

(b) adding a caustic solution to said mixture to form a precipitate;

(c) mixing said precipitate with polyphenylene oxide to form a blend;

(d) adding a solvent selected from the group consisting of methylene chloride, dibromomethane, bromochloromethane, and mixtures thereof to said blend in an amount to wet thoroughly said blend.

4,460,703

CATALYST FOR EPOXIDE POLYMERIZATION

Donna B. Carville, Plaquemine, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 18, 1983, Ser. No. 485,989

Int. Cl.³ B01J *31/14*

U.S. Cl. 502—155 **2 Claims**

1. A composition of matter consisting essentially of the reaction product of:

(1) a trialkylaluminum compound corresponding to the formula $Al(R)_3$ wherein R is independently each occurrence a lower alkyl radical;

(2) phenothiazine;

(3) a Lewis base selected from the group consisting of 1,4-dioxane and tetrahydrofuran;

(4) water; and

(5) acetylacetone,

wherein the ratio in moles of trialkylaluminum compound/-phenothiazine/Lewis base/water/acetylacetone is from about 1.0/0.1/1.0/0.2/0.2 to about 1.0/1.0/6.0/1.0/1.0.

4,460,704

CATALYST FOR THE PRODUCTION OF HYDROGEN

Martyn V. Twigg, Yarm, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Jun. 11, 1981, Ser. No. 272,466

Claims priority, application United Kingdom, Jun. 15, 1980, 8020713

Int. Cl.³ B01J *23/10, 23/74, 35/00*

U.S. Cl. 502—302 **13 Claims**

1. A catalyst for producing a gas containing hydrogen by reacting in the gaseous phase a hydrocarbon, hydrocarbon derivative or carbon monoxide with steam and/or, where appropriate, carbon dioxide, in the form of hollow cylinders having walls 0.5 to 3 mm thick, each said cylinder comprising a primary support made of refractory material having a pore volume less than 0.3 cm^3g^{-1} and a surface area less than 10

m^2g^{-1} and a coating thereon of a secondary support made of refractory oxidic material having a pore volume greater than 0.3 cm^3g^{-1} and an internal surface area in the range 15–300 m^2g^{-1}, said secondary support having deposited thereon a catalyst comprising nickel and/or cobalt.

4,460,705

CATALYST FOR OXIDATIVE DIMERIZATION

Takashi Terauchi, Iwaki; Koji Sato, Kita-Ibaraki, and Shoichi Hoshi, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1982, Ser. No. 450,649
Claims priority, application Japan, Dec. 29, 1981, 56-214257
Int. Cl.³ B01J *23/02, 23/04, 23/08, 23/10*
U.S. Cl. 502—303 1 Claim

1. A catalyst for the oxidative dimerization of toluene, consisting essentially of a composition represented by the general formula:

$$Tl_aM_bM'_cO_x$$

wherein

M represents at least one element selected from the group consisting of beryllium, magnesium, calcium, strontium and barium; M' represents at least one element selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, scandium, yttrium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, titanium, zirconium, hafnium, niobium, tantalum, zinc, aluminum, gallium, indium and antimony;

a is 0.05 to 15;

b is 0.05 to 15;

c is a number determined by the valences of thallium, M and M'; with the proviso that the number of alkali metal atoms is at most 20% of the number of total atoms constituting the catalyst except for oxygen when alkali metal is included in M'.

4,460,706

CATALYST FOR THE PRODUCTION OF STYRENE

Makoto Imanari, and Makoto Takiguchi, both of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1983, Ser. No. 484,310
Claims priority, application Japan, Apr. 13, 1982, 57-61393
Int. Cl.³ B01J *23/10*
U.S. Cl. 502—304 9 Claims

1. A catalyst for the production of styrene by the catalytic dehydrogenation of ethylbenzene by heating with steam, consisting essentially of:

40 to 87.5% by weight of iron oxide as Fe_2O_3, 11 to 50% by weight of cerium oxide as Ce_2O_3, and 1.5 to 40% by weight of potassium oxide as K_2O.

4,460,707

HYDROPROCESSING CATALYST AND METHOD FOR PREPARING IT

Howard D. Simpson, Irvine, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 28, 1982, Ser. No. 453,991
Int. Cl.³ B01J *21/04, 23/85, 23/88*
U.S. Cl. 502—315 47 Claims

1. A catalyst comprising one or more active metal components on a porous refractory oxide, said catalyst having at least about 60 percent of the total pore volume distributed in pores of diameter from about 180 angstroms to about 240 angstroms, with essentially all pores being of diameter greater than about 100 angstroms, and with less than about 10 percent of the total pore volume being in pores of diameter greater than 300 angstroms.

4,460,708

PRODUCTION OF ACTIVATED CARBON FIBERS FROM ACID CONTACTED POLYBENZIMIDAZOLE FIBROUS MATERIAL

Dagobert E. Stuetz, Watchung, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed May 6, 1983, Ser. No. 492,290
Int. Cl.³ C01B *31/12, 31/10;* D01F *9/12*
U.S. Cl. 502—426 22 Claims

1. An improved process for forming activated carbon fibers comprising:

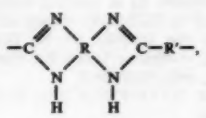
(a) contacting polybenzimidazole fibrous material with a solution of an acid having a pK_A value below about 4.5 to transform at least a portion of the polybenzimidazole to a polybenzimidazonium salt wherein the anion of said salt is derived from said acid,

(b) preoxidizing said polybenzimidazole fibrous material containing said polybenzimidazonium salt by heating in an oxygen-containing gaseous atmosphere at a temperature of approximately 400° to 550° C.,

(c) carbonizing said resulting preoxidized fibrous material by heating in a non-oxidizing gaseous atmosphere at a temperature of approximately 650° to 875° C. until a carbonaceous fibrous material is formed which contains at least 60 percent carbon by weight, and

(d) heating said resulting carbonaceous fibrous material in an oxidizing gas at a temperature of approximately 450° to 600° C. until an activated carbonaceous fibrous material is formed having a dynamic weight absorptivity of at least 100 mg. of CCl_4 per gram.

2. An improved process for forming activated carbon fibers in accordance with claim 1 wherein said polybenzimidazole fibrous material consists essentially of recurring units of the formula:



wherein R is a tetravalent aromatic nucleus, with the nitrogen atoms forming the benzimidazole rings paired upon adjacent carbon atoms of said aromatic nucleus, and R' is selected from the group consisting of (1) an aromatic ring, (2) an alkylene group having from 4 to 8 carbon atoms, and (3) a heterocyclic ring selected from the group consisting of (a) pyridine, (b) pyrazine, (c) furan, (d) quinoline, (e) thiophene, and (f) pyran.

3. An improved process for forming activated carbon fibers in accordance with claim 1 wherein said polybenzimidazole fibrous material is poly-2,2'-(m-phenylene)-5,5'-bibenzimidazole.

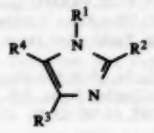
4,460,709

PROCESS FOR PRODUCING OXYGEN-CONTAINING ORGANIC COMPOUNDS

Yoshihisa Kiso, Iwakuni, and Kenji Saeki, Ohtake, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,724
Claims priority, application Japan, Aug. 13, 1981, 56-125928
Int. Cl.³ C07C *27/06*
U.S. Cl. 518—700 13 Claims

1. A process for producing an oxygen-containing organic compound which comprises reacting carbon monoxide with hydrogen in the presence of a catalyst under heat and pressure, said catalyst comprising (a) a ruthenium compound and (b) an imidazole compound represented by the following formula:



wherein R^1 represents a hydrogen atom or a monovalent substituent; R^2, R^3 and R^4 are identical or different, and each represents a member selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl-substituted silyl group and an unsubstituted or substituted hydrocarbon group; or R^1 and R^2, R^3 and R^4, or R^1 and R^4 may be taken together to form a substituted or unsubstituted hydrocarbon group.

4,460,710

CATALYTIC METHOD FOR SYNTHESIZING HYDROCARBONS

Richard S. Sapienza, Shoreham, N.Y.; Michael J. Sansone, Summit, N.J., and William A. R. Slegeir, Hampton Bays, N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 293,043, Aug. 14, 1981, Pat. No. 4,396,539. This application Apr. 15, 1983, Ser. No. 485,349

Int. Cl.³ C07C *1/04*

U.S. Cl. 518—700 **7 Claims**

1. A method for synthesizing principally normally liquid liner paraffinic hydrocarbons in an organic solvent comprising contacting a mixture of hydrogen and carbon monoxide with a slurry of a catalyst prepared by the process of immersing a heterogeneous component, composed of palladium or platinum or mixtures thereof deposited on a solid phase, into a solution of cobalt carbonyl or cobalt carbonyl precursors which on heating form the cobalt carbonyl, and heating the resulting mixture at a temperature from about 100° to 350° C. under pressure.

4,460,711

INSTANTANEOUS PRODUCTION BY EJECTION OF A FLEXIBLE FOAMED OR SOLID RUBBER MASS ON A SUBSTRATE

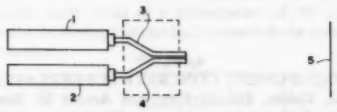
Amnon Jacobson, Tel-Aviv, Israel, assignor to Ispra Protection Associates, Herzelia, Israel

Filed Sep. 9, 1982, Ser. No. 416,432

Claims priority, application Israel, Jun. 30, 1982, 66169

Int. Cl.³ C08J *9/30*

U.S. Cl. 521—65 **11 Claims**



1. A method for the instantaneous production of a foamed or solid rubber mass on a target, comprising introducing an aqueous latex dispersion together with a pressurized inert propellant into a first pressure vessel fitted with an ejection nozzle and control means; introducing an aqueous solution of a coagulant together with a pressurized propellant into a second pressure vessel fitted with an ejector nozzle and control means; placing said first and second vessels at a predetermined distance from the target in such positions that liquid jets ejected from said vessels will converge on the target and impinge thereon at spots distanced from each other by not more than 50 cms; and simultaneously actuating the control means of said vessels thereby to cause the ejection of liquid jets therefrom on said target.

4,460,712

COMPOSITIONS PRODUCING AMINOFUNCTIONAL SILICONE FOAMS AND COATINGS

John D. Blizzard, Bay City, and Terence J. Swihart, Essexville, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 23, 1983, Ser. No. 565,072

Int. Cl.³ C08J *9/02*

U.S. Cl. 521—92 **11 Claims**

1. A method for producing a silicone foam, said method comprising mixing together

(A) the reaction product of

(i) an organosilicon resin consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units, wherein R represents a monovalent hydrocarbon radical, and the ratio of $R_3SiO_{\frac{1}{2}}$ unit to $SiO_{4/2}$ units is from 0.6/1 to 0.9/1, and

(ii) a polyorganohydrogensiloxane and

(B) an aminofunctional silicone fluid polymer having the general unit formula $R'_aQ_bSiO_{(4-a-b)/2}$, wherein in said unit formula

R' is selected from the group consisting of monovalent hydrocarbon radicals, hydroxy radicals, and alkoxy radicals;

Q is an aminofunctional radical; the sum of the values of a and b is an average of at least 1;

there being in said aminofunctional silicone fluid polymer, at least one Q radical.

4,460,713

MICROWAVE CURED SILICONE ELASTOMERIC FOAM

Chi-long Lee, and Sherwood Spells, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 392,402, Jun. 25, 1982. This application Jan. 27, 1983, Ser. No. 461,419

Int. Cl.³ C08J *9/30*

U.S. Cl. 521—122 **8 Claims**

1. An elastomeric silicone foam produced by drying a stable froth produced from an aqueous silicone emulsion suitable to provide an elastomeric product upon removal of the water comprising

(i) mechanically generating a stable froth from a silicone emulsion comprising 100 parts by weight of anionically stabilized hydroxyl endblocked polydiorganosiloxane having an average molecular weight of greater than 10,000, in the form of an aqueous emulsion having a pH in the range of 9 to 11.5 inclusive; at least one part by weight colloidal silica; an organic tin compound; and water; adding sufficient anionic or nonionic surfactant and thickener to make the froth stable until the water is removed in step (ii), and then,

(ii) exposing the stable froth to sufficient microwave energy to remove the water from the emulsion, forming an elastomeric foam.

4,460,714

UNSATURATED POLYESTER RESIN FOAMS USING INORGANIC IRON SALTS

Ernest R. Kamens, Tonawanda, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 1, 1983, Ser. No. 557,076

Int. Cl.³ C08J *9/02*

U.S. Cl. 521—122 **8 Claims**

1. In a foamable and curable liquid composition for producing low density foams comprised of an admixture of an unsaturated polyester resin, an organic isocyanate compound, a silicone surfactant, an organic peroxide curing agent system, and a cobalt salt accelerator, the improvement comprising adding to this composition a sufficient amount of at least one inorganic iron salt as a secondary accelerator in order to improve the

efficiency of the foaming and curing reaction and to prevent cracking and splitting of the foamed and cured product.

4,460,715

STABLE DISPERSIONS OF POLYMERS IN POLYFUNCTIONAL COMPOUNDS HAVING A PLURALITY OF ACTIVE HYDROGENS AND POLYURETHANES PRODUCED THEREFROM

Dwight K. Hoffman; Robert F. Harris; Nancy B. Tefertiller, all of Midland, Mich., and Randall C. Rains, Pittsburgh, Pa., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 97,070, Nov. 23, 1979, Pat. No. 4,390,645. This application Nov. 10, 1981, Ser. No. 320,160

Int. Cl.³ C08G *18/14, 18/30, 18/63*

U.S. Cl. 521—137 11 Claims

1. A stable copolymer dispersion which comprises:

(A) a polyahl having dispersed therein;

(B) an addition copolymerizate of (1) a monomeric adduct of (a) a polyahl and (b) reactive acrylyl monomer with (2) at least one other ethylenically unsaturated monomer; or

(C) a polymeric adduct of (1) a polyahl and (2) an addition copolymer of a reactive acrylyl monomer with at least one other ethylenically unsaturated monomer which is nonreactive with the acrylyl monomer; or

(D) a mixture of (B) and (C); or

(E) a mixture of (B) and/or (C) and a polymer of at least one other ethylenically unsaturated monomer; provided that in the copolymer dispersion, the mole ratio of polymerized acrylyl to polyahl is at least 0.001:1 and less than 0.1:1.

4,460,716

COATED SAND COMPOSITION AND METHOD FOR PRODUCING SAME

Yukio Saeki; Shigeru Nemoto, and Yukio Tokunaga, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 504,911

Claims priority, application Japan, Jun. 24, 1982, 57-107587

Int. Cl.³ C08K *5/13*

U.S. Cl. 523—145 20 Claims

1. A resin coated sand for shell molding foundry applications comprising foundry aggregates coated with a phenolic resin containing bromophenols, wherein the incorporating proportion range of bromophenols to 100 parts by weight phenolic resin is from about 0.2 to about 40 parts by weight.

4,460,717

RESIN COATED SAND COMPOSITION AND METHOD OF PRODUCING SAME

Yukio Saeki; Shigeru Nemoto, and Yukio Tokunaga, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 504,912

Claims priority, application Japan, Jul. 13, 1982, 57-120690; Jul. 23, 1982, 57-127624

Int. Cl.³ C08K *5/32*

U.S. Cl. 523—145 15 Claims

1. A resin coated sand for shell-molding foundry operations providing improved shake-out properties of molds prepared therefrom, comprising foundry aggregates coated with a phenolic resin containing an aromatic nitro compound, wherein the incorporating range of aromatic nitro compounds to 100 parts by weight phenolic is from about 0.2 to about 40 parts by weight.

4,460,718

EPOXY RESIN COMPOSITION

Isamu Tanaka; Hitoshi Oka; Akira Tomizawa, all of Yokohama, and Hiroshi Kikuchi, Zushi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1983, Ser. No. 469,279

Claims priority, application Japan, Feb. 26, 1982, 57-29007

Int. Cl.³ C08L *63/00, 63/02, 63/04, 63/08*

U.S. Cl. 523—400 14 Claims

1. An epoxy resin composition comprising:

(a) one or more epoxide compounds having two or more epoxy groups on the average per molecule in an amount of 100 parts by weight.

(b) one or more epoxy-modified guanidine compounds obtained by modifying 1-o-tolylbiguanide with a monoepoxide compound, a diepoxide compound or a polyfunctional epoxide compound in an amount of 0.05 to 2.0 equivalents per equivalent of the epoxide compound,

(c) one or more fillers in an amount of 3 to 150 parts by weight;

(d) a thixotropic agent consisting essentially of powder of SiO_2 having a particle size of 0.1 μm or less, and

(e) an organic solvent; said thixotropic agent being used in an amount for making the thixotropy index of said composition 5 to 40, and said organic solvent being used in an amount for making the viscosity of said composition 800 to 10,000 poises when measured by a B type rotational viscometer at a rotational rate of 1 rpm at 20° C.

4,460,719

PIGMENTED PEROXIDE AND POLYESTER COMPOSITIONS

Carlos R. Danville, 4505 Gilhouse St., Toledo, Ohio 43623

Division of Ser. No. 197,798, Oct. 17, 1980, Pat. No. 4,370,428. This application Jan. 19, 1983, Ser. No. 459,103

Int. Cl.³ C08K *5/00*

U.S. Cl. 523—508 10 Claims

1. A process for determining the cure time of a polyester resin composition by employing a composition comprising a polyester resin, fillers, and an effective amount of a pigment 1-[(4-methyl-2-nitrophenyl)azo]-2-naphthalenol and benzoyl peroxide wherein said composition undergoes a color change from peach to yellow when said composition is cured.

4,460,720

MULTICOMPONENT CONCRETE SUPERPLASTICIZER

James M. Gaidis, Ellicott City, and Arnold M. Rosenberg, Potomac, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Feb. 17, 1982, Ser. No. 349,555

Int. Cl.³ C08K *3/34*

U.S. Cl. 524—5 16 Claims

1. A cement superplasticizer composition comprising from 5 to 95 percent by weight of an alkali metal polyacrylate having a weight average molecular weight of from 500 to 25,000 in combination with from 5 to 95 percent by weight of (a) an alkali or alkaline earth metal polynaphthalene sulfonate-formaldehyde condensate or (b) a mixture in any proportion of an alkali or alkaline earth metal polynaphthalene sulfonate-formaldehyde and an alkali or alkaline earth metal lignin sulfonate.

4,460,721

ALCOHOL-SOLUBLE PRINTING INK OR VARNISH

Wilhelm Elser, Griesheim, and Manfred Munzer, Bensheim, both of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed May 24, 1983, Ser. No. 497,595

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220909

Int. Cl.³ C08F 22/026; C09D 11/02, 5/00, 3/12

U.S. Cl. 524—35 16 Claims

1. A printing ink or varnish which is compatible with at least one alcohol-soluble cellulose ester and which comprises a binder comprising a copolymer which consists of isopropyl methacrylate and at least one hydrophilic comonomer, and a solvent comprising about 80% or more of a lower alkyl alcohol.

4,460,722

PROCESS FOR PRODUCING A MICROCAPSULE

Yuriko Igarashi, and Yoshio Okada, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

Filed Feb. 23, 1982, Ser. No. 351,598

Claims priority, application Japan, Mar. 6, 1981, 56-32799

Int. Cl.³ C08K 5/07; C08J 3/10, 3/16

U.S. Cl. 523—206 6 Claims

1. A process for producing a microcapsule comprising the steps of:

(a) dispersing a substance to be encapsulated within the wall membrane of said microcapsule in an aqueous solution containing a water-soluble cationic urea resin, an anionic surfactant and at least one prepolymer selected from the group consisting of,

(i) prepolymer of urea-formaldehyde resin,

(ii) prepolymer of melamine-formaldehyde resins, and

(iii) prepolymer of melamine-urea-formaldehyde resin;

(b) bringing said prepolymer and said cationic urea resin into polycondensation and cross-linking while

(c) causing complex-coacervation of said aqueous dispersion by adding an acid-catalyst thereby forming said wall membrane; then

(d) adding 5 to 300 parts by weight of a monosaccharide selected from the group consisting of

(i) fructose,

(ii) glucose, and

(iii) sorbose

to said aqueous dispersion of said microcapsule corresponding to 100 parts by weight of residual formaldehyde remaining in said aqueous dispersion of said microcapsule; while

(e) adjusting the pH of said aqueous dispersion of said microcapsule to 10.5–12.5 by an addition of hydroxide of an alkaline earth metal at a temperature of 20° to 70° C. thereby removing the residual formaldehyde remaining in the system.

4,460,723

ASPHALT COMPOSITIONS

Kent W. Rollmann, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 29, 1982, Ser. No. 445,308

Int. Cl.³ C08L 95/00

U.S. Cl. 524—70 18 Claims

10. An asphalt composition stabilized against viscosity increases at elevated temperatures comprising asphalts susceptible to viscosity increase and a finite small but effective viscosity stabilizing amount of at least one of

(a) lithium, sodium, and potassium salts of aliphatic carboxylic acids having from 1–20 carbon atoms per molecule,

(b) lithium and sodium salts of aromatic carboxylic acids having from 7–20 carbon atoms per molecule,

(c) lithium and sodium salts of cycloaliphatic acids having from 4–20 carbon atoms per molecule,

(d) lithium and sodium salts of aromatic sulfonic acids having from 6–20 carbon atoms per molecule, and

(e) lithium and sodium salts of nitric acid and wherein the composition additionally contains a rubbery polymer.

4,460,724

HOT MELT COMPOSITION CONTAINING A HYDROGENATED RESIN COPOLYMER

Shozo Tsuchiya, Tokyo; Akio Ohshima, and Hideo Hayashi, both of Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1982, Ser. No. 408,387

Claims priority, application Japan, Aug. 21, 1981, 56-130125

Int. Cl.³ C08L 23/08, 9/00, 45/00

U.S. Cl. 524—77 10 Claims

1. A hot melt composition comprising: (1) a hydrogenated resin (II) having a softening point ranging from 50° C. to 140° C., said hydrogenated resin (II) being prepared by hydrogenating a copolymer resin (I) obtained by copolymerizing 20 to 60 wt% of a component (A) selected from the group consisting of five-member cyclic compounds each having a conjugated double bond and represented by the general formula (A) given below and Diels-Alder addition products thereof (A):

GENERAL FORMULA (A):

wherein H is hydrogen; R is an alkyl group having from 1 to 3 carbon atoms; m and n are zero or integers of not less than 1 and are in the relation of $m+n=6$;

with 25 to 70 wt% of a codimer (component B) of said five-member cyclic compound and an aliphatic conjugated diolefin having 4 to 5 carbon atoms and 2.5 to 40 wt% of at least one unsaturated monomer (component C) selected from the group consisting of polar vinyl compounds; and (2) one or more compound selected from the group consisting of copolymers of ethylene with polar vinyl compounds, polyester resins and waxes.

4,460,725

POLYETHERS CONTAINING 2,2,6,6-TETRAMETHYL PIPERIDINYL CARBOXYLIC ACID ESTER GROUPS AND SYNTHETIC RESIN COMPOSITIONS

William E. Leistner, 1458 Bay Blvd., Atlantic Beach, N.Y. 11509; Motonobu Minagawa, 1-207-3 Shichizacho, Koshigaya City, Saitama, Japan; Naohiro Kubota, 3-105 Ageo Higashi Danchi, 404-1 Ageo-mura, Ageo City, Saitama, Japan; Toshihiro Shibata, 136-49-3-104 Nara-cho, Omiya City, Saitama, Japan, and Ryozo Arata, 418-1 Shikatebukuro, Urawa City, Saitama, Japan

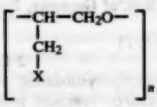
Filed Mar. 7, 1983, Ser. No. 472,710

Claims priority, application Japan, Mar. 8, 1982, 57-36312

Int. Cl.³ C08K 5/34; C07D 403/00, 251/00, 251/28

U.S. Cl. 524—102 25 Claims

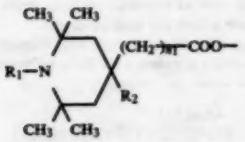
1. Polyethers containing 2,2,6,6-tetramethyl piperidinyl carboxylic acid ester or ether groups comprising polymeric units having the structure

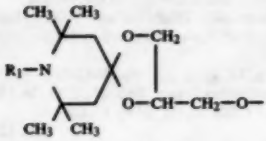


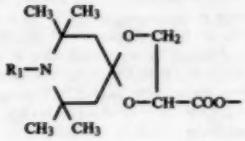
I

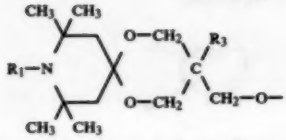
wherein

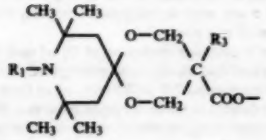
X is selected from the group consisting of:











R_1 is selected from the group consisting of hydrogen, —O, alkyl, hydroxy alkyl and epoxyalkyl having from one to about eighteen carbon atoms, acyl having from one to about eighteen carbon atoms, cycloalkyl having from three to about eighteen carbon atoms; phenyl; phenalkyl and alklphenyl having from seven to about twenty-four carbon atoms;

R_2 is hydrogen or hydroxy;

n_1 is 0 or 1;

R_3 is lower alkyl having from one to about six carbon atoms; and

n is the average number of such units in the polyether, within the range from 2 to 50.

4,460,726

METHOD FOR STABILIZING ORGANOPOLYSILOXANES

Peter Huber; Rudolf Kaufmann, both of Burghausen, and Jürgen Burkhardt, Winhöring, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 16, 1983, Ser. No. 533,020

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1983, 3306295

Int. Cl.³ C08K *5/15*

U.S. Cl. 524—114 **3 Claims**

1. A method for stabilizing organopolysiloxanes, which contain phosphonitrile chlorides and/or reaction products thereof against changes in viscosity which comprises adding at least one compound containing at least one epoxy group per molecule to the organopolysiloxanes containing the phosphorus compounds.

4,460,727

WATER BASE PIGMENT INK COMPOSITION FOR WRITING

Yukito Shoji, Osaka, Japan, assignor to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo and Sakura Color Products Corp., Osaka, both of, Japan

Filed Oct. 21, 1982, Ser. No. 435,664

Claims priority, application Japan, Nov. 7, 1981, 56-179499

Int. Cl.³ C08K *3/20, 5/21*

U.S. Cl. 524—215 **5 Claims**

1. A water based pigment ink composition for writing, comprising:

(1) from 3 to about 30% by weight of a pigment, based on the total ink composition;

(2) from 5 to 300 parts by weight of a dispersing agent, based on 100 parts by weight of pigment in the ink composition, which is a copolymer of from 5 to less than 50 mol % of a water-soluble amine salt or ammonium salt of acrylic acid or methacrylic acid with the remaining monomer being at least one ester of acrylic or methacrylic acid, styrene or styrene derivative;

(3) from 0.5 to 50% by weight of urea, thiourea or derivative thereof as an anti-drying agent, based on the total ink composition; and

(4) from 15 to 75% by weight of an aqueous medium, based on the total amount of ink composition, containing from 2 to 50 parts by weight of ethylene glycol, glycerine, diethylene glycol, propylene glycol and/or dipropylene glycol per 100 parts by weight of water, as a high boiling point water-soluble organic solvent.

4,460,728

HOT MELT ADHESIVE COMPOSITIONS

Robert C. Schmidt, Jr., Port Murray; Stanley J. Decowski, Jr., and Paul P. Puletti, both of Glen Gardner, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Feb. 28, 1983, Ser. No. 470,797

Int. Cl.³ C08L *93/04*

U.S. Cl. 524—271 **15 Claims**

1. A non-pressure sensitive hot melt adhesive composition consisting essentially of:

(a) 10 to 40% by weight of a copolymer of ethylene with vinyl acetate or an alkyl acrylate wherein the vinyl acetate or alkyl acrylate comprises 5 to 25% by weight of the copolymer.

(b) 10 to 40% by weight of atactic polypropylene; the weight ratio of atactic polypropylene to ethylene copolymer being between 0.5 and 2.5;

(c) 20 to 50% by weight of a compatible tackifying resin;

(d) 0 to 15% by weight of plasticizing oil;

(e) 0 to 15% by weight of a petroleum derived wax; and

(f) 0 to 1.5% stabilizer;

and wherein the composition is characterized by a viscosity within the range of 1,000 to 10,000 cps. at 300° F.; a minimum open time of 5 seconds; and a minimum tensile strength at 100% elongation of 60 psi at room temperature and 30 psi at 100° F.

12. A multi-line type diaper construction comprising at least polyethylene or polypropylene substrate bonded to at least one non-woven substrate using a non-pressure sensitive hot melt composition consisting essentially of:

(a) 20 to 30% by weight of a copolymer of ethylene with vinyl acetate or a lower alkyl acrylate;

(b) 20 to 40% by weight of atactic polypropylene; the weight ratio of atactic polypropylene to ethylene copolymer being between 0.5 and 2.5;

(c) 35 to 50% by weight of a compatable tackifying resin;

(d) 5 to 15% by weight of a plasticizing oil;

(e) 0 to 5% by weight of a petroleum derived wax; and
(f) 0 to 1.5% by weight of a stabilizer;
and wherein the composition is characterized by a viscosity of 2000 to 8000 cps at 300° F., a minimum open time of 10 seconds, a minimum bonding temperature of 160° F. and a minimum tensile strength at room temperature of 100 psi and at 100° F. of 50 psi.

4,460,729
POLYESTER COMPOSITION
Jeffrey T. Books, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed May 13, 1982, Ser. No. 377,922
Int. Cl.³ C08L 67/02
U.S. Cl. 524—394 5 Claims

1. A thermoplastic composition which is injectionmoldable at a relatively low mold temperature, said composition comprising an intimate admixture of:
(a) polyethylene terephthalate having an intrinsic viscosity in the range of 0.4 to 0.9 as measured at 25° C. in a solvent consisting of 60% by weight of phenol and 40% by weight of tetrachloroethane;
(b) polyethylene having a viscosity within the range of from about 150 to about 700 centipoise as measured at 140° C. with a Brookfield viscometer, present in an amount within the range of from about 0.5 to about 12 parts per hundred parts of the polyethylene terephthalate;
(c) an adjuvant synergistically cooperative with the polymer of (b) to improve the releasability, from the injection mold, of articles injection molded from said composition at mold temperatures of at least as low as 93° C., said adjuvant being a sodium or potassium salt of a substantially saturated aliphatic monocarboxylic acid containing from about 12 to about 36 carbon atoms in the molecule present in an amount within the range of from about 0.05 to about 5 parts per hundred parts of the polyethylene terephthalate; and
(d) at least one reinforcing filler present in amount of from about 10 to about 160 parts per 100 parts by weight of the polyethylene terephthalate.

4,460,730
COMPOSITION CONTAINING A POWDER OF AN INORGANIC MATERIAL
Hiroaki Koyama, and Shigeo Shimizu, both of Kobe, Japan, assignors to Kanebo, Ltd., Tokyo, Japan
Filed May 13, 1983, Ser. No. 494,437
Claims priority, application Japan, May 14, 1982, 57-80078; May 14, 1982, 57-80079
Int. Cl.³ C08L 61/10, 61/34
U.S. Cl. 524—403 16 Claims

1. A composition having a high content of an inorganic material comprising
(1) a granular or powdery phenol-aldehyde resin which is a condensation product of a phenol, an aldehyde and optionally a nitrogen-containing compound having at least two active hydrogens and is characterized by (A) containing spherical primary particles and their secondary agglomerated particles each having a particle diameter of 0.1 to 150 microns, (B) having such a size that at least 50% by weight thereof can pass through a 100 Tyler mesh sieve, and (C) having a free phenol content, determined by liquid chromatography, of not more than 500 ppm, and
(2) a powder of an inorganic material,
the amount of the phenol-aldehyde resin being less than 11% by weight based on the total weight of the phenol-aldehyde resin (1) and the powdery inorganic material (2).

4,460,731
REINFORCED THERMOPLASTIC POLYESTER COMPOSITIONS
John E. Kochanowski, Stockbridge, Mass., and Allen D. Wambach, Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.
Continuation of Ser. No. 383,623, Jun. 1, 1982, abandoned, which is a continuation of Ser. No. 179,823, Aug. 20, 1980, abandoned, which is a continuation of Ser. No. 755,353, Dec. 29, 1976, abandoned. This application Oct. 12, 1983, Ser. No. 541,273
Int. Cl.³ C08K 3/40
U.S. Cl. 524—451 2 Claims

1. A reinforced thermoplastic composition which provides molded articles with enhanced resistance to warpage, said composition consisting essentially of:
(a) from about 40 to 90 parts by weight of poly(1,4-butylene terephthalate) and poly(ethylene terephthalate), the ratio of poly(1,4-butylene terephthalate) to poly(ethylene terephthalate) to poly(ethylene terphthalate) being equal to or greater than 1; and
(b) from about 10 to 60 parts by weight of a combination of:
(i) an effective, warp reducing amount of talc, plus
(ii) a reinforcing amount of filamentous glass.

4,460,732
PARTICULATE DISPERSIONS
Richard Buscall, and Terence Corner, both of Cheshire, England, assignors to Imperial Chemical Industries PLC, London, England
Filed Jun. 17, 1983, Ser. No. 505,325
Claims priority, application United Kingdom, Jun. 22, 1982, 8218012
Int. Cl.³ C08F 20/00
U.S. Cl. 524—460 10 Claims

1. In a dispersion in an aqueous medium of an organic particulate solid, substantially all the particles of which have a size less than 100 microns, which dispersion contains a polymeric composition which (a) is soluble in the aqueous medium and (b) comprises a copolymer of at least one hydrophobic monomer and at least one hydrophilic monomer, the improvement in which the said at least one hydrophobic monomer provides less than 20% by weight of the copolymer and is selected from the class consisting of long chain alkyl, containing 12 to 18 carbon atoms, or aryl esters of an acrylic or C_{1-15}-alkacrylic acid; vinyl-esters of a long chain alkanoic acids having 6–30 carbon atoms; and vinyl aromatic compounds and vinyl-ended macromers thereof, and the said at least one hydrophilic monomer provides more than 80% by weight of the copolymer and contains an acidic group and/or a salt thereof.

4,460,733
POLYCARBONATE COMPOSITIONS HAVING LOW GLOSS VALUES
Russell P. Carter, Jr., New Martinsville, W. Va.; In C. Lim, Pittsburgh, and Gerard E. Reinert, McMurray, both of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.
Filed Nov. 29, 1982, Ser. No. 445,317
Int. Cl.³ C08K 3/36
U.S. Cl. 524—493 3 Claims

1. A thermoplastic molding composition comprising a polycarbonate resin and about 0.6 to about 10.0% of silica which is characterized in that its average particle size is from about 1 to about 9.5 microns and further in that its specific surface area is from about 2.2 to about 0.45 m^2/g, said percentages being relative to the weight of said composition.

4,460,734

SELF-LEVELING FLOOR POLISH COMPOSITIONS

Joseph M. Owens, and Charles E. O'Farrell, both of Hatboro, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 19, 1983, Ser. No. 486,591
Int. Cl.³ C08K 5/06
U.S. Cl. 524—376 8 Claims

1. An aqueous floor polish polymer composition, containing from about 5 to 50% by weight of water insoluble latex polymer prepared by emulsion polymerization of at least one ethylenically unsaturated monomer selected from the group consisting essentially of the (C_1–C_8) alkyl acrylates and methacrylates, the mono- and di-(C_1–C_5) alkyl itaconates and fumarates, maleic anhydride, vinyldiene chloride, styrene, vinyl toluene, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, acrylic acid, methacrylic acid, itaconic acid, fumaric acid, citraconic acid, crotonic acid, beta-acryloxypropionic acid, and the hydroxy-(C_1–C_6) alkyl acrylates and methacrylates and dispersed in an aqueous medium, and optionally containing any of preservatives, dispersants, anti-microbial agents, dyes or coloring agents, wherein the improvement consists essentially of a leveling agent which is at least one compound selected from the group consisting of polyalkoxylated linear alcohols of the formula

$$CH_3(CH_2)_m O(CH_2CH_2O)_n H$$

wherein m is an integer from 9 to 15 and n is an integer from 2 to 6 and wherein the weight ratio of leveling agent to latex polymer solids is from 0.0001 to 2.

4,460,735

BLEND OF POLYCARBONATE AND WHOLLY AROMATIC POLYESTER

Michael F. Froix, Menlo Park, Calif., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,536
Int. Cl.³ C08L 67/00
U.S. Cl. 524—537 27 Claims

1. A polymer blend which is capable of exhibiting an anisotropic melt phase and the ability to form shaped articles having improved mechanical properties comprising:

(a) approximately 5 to approximately 40 percent by weight, based upon the total weight of components (a) and (b), of a polycarbonate, and

(b) approximately 60 to approximately 95 percent by weight, based upon the total weight of components (a) and (b), of a melt processable wholly aromatic polyester which is capable of forming an anisotropic melt phase apart from said blend.

4,460,736

BLEND OF SULFONE POLYMER AND WHOLLY AROMATIC POLYESTER

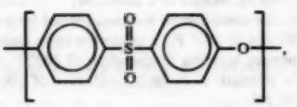
Michael F. Froix, Menlo Park, Calif., and Norman Trouw, Murray Hill, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,532
Int. Cl.³ C08L 67/00
U.S. Cl. 524—539 44 Claims

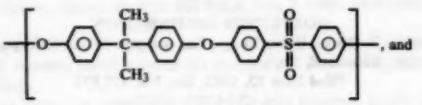
1. A polymer blend which is capable of exhibiting an anisotropic melt phase, improved processability characteristics, and the ability to form shaped articles having satisfactory mechanical properties comprising:

(a) approximately 5 to approximately 40 percent by weight, based upon the total weight of components (a) and (b), of a sulfone polymer selected from the group consisting of

(i) polyether sulfone having recurring units of the formula



(ii) polysulfone having recurring units of the formula



(iii) a mixture of (i) and (ii), and

(b) approximately 60 to approximately 95 percent by weight, based upon the total weight of components (a) and (b), of a melt processable wholly aromatic polyester which is capable of forming an anisotropic melt phase apart from said blend.

4,460,737

POLYURETHANE JOINT SEALING FOR BUILDING STRUCTURES

Robert M. Evans, Cleveland Heights, and Thomas M. Leonard, Lakewood, both of Ohio, assignors to RPM, Inc., Medina, Ohio

Division of Ser. No. 54,491, Jul. 3, 1979, Pat. No. 4,318,959.
This application Mar. 23, 1981, Ser. No. 246,225
Int. Cl.³ C08L 75/04
U.S. Cl. 524—584 27 Claims

1. In a non-sag elastomeric-type joint sealing composition containing a curable polyfunctional polyurethane prepolymer with terminal reactive groups and an average molecular weight of at least 1000 mixed with fillers and other compounding ingredients and having a PFER value of at least 2 and a Boeing sag value below one, said composition being curable at ambient temperatures from 10° to 40° C. to provide a strong elastomeric polyurethane sealant with an elongation in excess of 100 percent, the improvement wherein said composition incorporates 2 to 8 percent by weight of a fibrillated polyolefin with a surface area (BET) of at least 5 square meters per gram comprising macrofibrils having an average diameter below 20 microns and an average aspect ratio of at least 30 to 1; wherein said composition incorporates 8 to 30 percent by weight of a compatible cofiller that stabilizes the composition to prevent substantial sweat out; and wherein the amounts of the fibrillated polyolefin and the cofiller are selected to provide a non-sag joint sealing composition which can be applied by extrusion and cured under ambient conditions to provide a strong soft low-modulus elastomeric sealant with a Shore A durometer hardness below 45.

4,460,738

PREPARATION OF CARBOXYLIC ACID-CONTAINING POLYURETHANE PREPOLYMERS AND AQUEOUS DISPERSIONS THEREOF

Richard L. Frentzel, Guilford; Louis Rua, Jr., Woodbridge, and Anne L. Pacheco, Uncasville, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 16, 1983, Ser. No. 475,786
Int. Cl.³ C08G 18/34
U.S. Cl. 524—591 17 Claims

1. A process for making a carboxylic acid-containing polyurethane prepolymer comprising the steps of:

(a) reacting at least one polyhydroxy-containing monoether or polyether compound with an ethylenically unsaturated dicarboxylic acid selected from the group consisting of maleic acid, fumaric acid, itaconic acid and mixtures

thereof, in the presence of a peroxy-type free-radical initiator to form a carboxylic acid-containing monoether or polyether polyol addition product; said weight ratio of said monoether or polyether compound to said acid being from about 99:1 to about 70:30; and

(b) reacting said carboxylic acid-containing monoether or polyether polyol with an organic polyisocyanate to form said carboxylic acid-containing polyurethane prepolymer.

4,460,739

COMPOSITION FOR PROMOTING ADHESION OF CURABLE SILICONES TO SUBSTRATES

Bruce A. Ashby, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 1, 1983, Ser. No. 510,341
Int. Cl.³ C08K *11/00*
U.S. Cl. 524—702 **27 Claims**

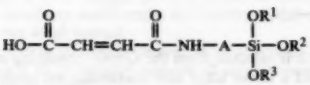
1. A self-bonding, low modulus, one package, room temperature vulcanizing silicone composition, curable by exposure to moisture to a solid elastic state which exhibits superior adhesion to substrates, said composition comprising:

(a) a silanol chain-stopped diorganopolysiloxane;

(b) a silane or polysilane crosslinker therefor;

(c) a catalyst capable of promoting the reactions between (a) and (b); and

(d) a small, effective, adhesion promoting amount of a composition comprising at least one compound of the formula:



wherein A is a divalent alkylene of from 2 to 6 carbon atoms and R^1, R^2, and R^3 are, independently, C_1–C_6 alkyl or C_2–C_6 alkanoyl.

4,460,740

METHOD FOR PREVENTING SURFACE STAIN OF CURED SILICONE SEALANT

Masatoshi Arai, Gunma, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1983, Ser. No. 476,550
Claims priority, application Japan, Mar. 26, 1982, 57-48227
Int. Cl.³ C08K *5/16*
U.S. Cl. 524—724 **3 Claims**

1. A silicone sealant composition insusceptible to stain on the surface of a cured rubbery elastomer thereof which comprises:

(a) 100 parts by weight of a diorganopolysiloxane blocked at both molecular chain ends each with a hydroxy group directly bonded to the silicon atom;

(b) from 0.1 to 25 parts by weight of an organosilicon compound having at least 2 hydrolyzable groups bonded to the silicon atoms per molecule on an average;

(c) from 1 to 400 parts by weight of a filler;

(d) optionally, up to 5 parts by weight of a curing catalyst, and

(e) from 0.01 to 5.0 parts by weight, per 100 parts by weight of the total amount of the components (a) to (d) above, of a surface active agent having, in a molecule, at least one fluorine atom.

4,460,741

POLYBLENDS OF THERMOPLASTIC COPOLYETHERESTERS, STYRENE-MALEIC ANHYDRIDE POLYMERS, ACRYLONITRILE-BUTADIENE-STYRENE POLYMERS, AND NITRILE RUBBERS

Daniel L. Dufour, and James S. Holtrop, both of Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 4, 1982, Ser. No. 439,089
Int. Cl.³ C08L *25/14, 55/02, 25/08, 25/12*
U.S. Cl. 525—64 **15 Claims**

1. A polyblend consisting essentially of:

A. from 3 to 20% by weight of a thermoplastic copolyetherester elastomer;

B. from, 15 to 75% by weight of a polymer of a vinyl-aromatic monomer and an unsaturated dicarboxylic acid anhydride monomer and optionally a termonomer selected from the group consisting of C_1 to C_3 acrylates and methacrylates and unsaturated nitriles, wherein the relative amounts by weight of the monomers in the polymer are 50 to 85% of the vinyl-aromatic monomer, 15 to 35% of the dicarboxylic acid anhydride and 0 to 20% of the termonomer; and wherein the monomers are polymerized in the presence of 0 to 25% by weight of a rubber having a glass transition temperature below 0° C.;

C. from 12 to 60% by weight of a grafted polymer composition comprising a graft polymer of from 20 to 40 parts by weight of a monomer selected from the group consisting of acrylonitrile and methyl methacrylate and 80 to 60 parts by weight of a vinyl aromatic monomer, the polymer being grafted onto a substrate rubber having a glass transition temperature below 0° C. wherein the monomers are polymerized in the presence of and grafted onto the substrate rubber, wherein the weight percent of the rubber is in the range from 10 to 60% by weight based on the weight of the composition; and

D. from 3 to 20% by weight of a nitrile rubber comprising a polymer of 15 to 50 parts by weight of an unsaturated nitrile monomer and 85 to 50 parts by weight of a diene monomer wherein the polymer has a Mooney viscosity in the range from 30 to 95 cps.

and wherein the weight percent for Components (A), (B), (C) and (D) is based on the total amount of Components (A), (B), (C) and (D) in the polyblend.

14. A polyblend consisting essentially of:

A. from 3 to 20% by weight of a thermoplastic copolyetherester elastomer;

B. from 15 to 75% by weight of a polymer of a styrene-maleic anhydride polymer comprising 50 to 85% by weight of styrene, 5 to 35% by weight of maleic anhydride and 0 to 20% of a termonomer selected from the group consisting of C_1 to C_3 acrylates and methacrylates and unsaturated nitriles;

C. from 12 to 60% by weight of a grafted polymer composition comprising a rubber-modified polymer of a vinyl aromatic monomer, an unsaturated dicarboxylic acid anhydride and optionally a termonomer selected from the group consisting of C_1 to C_3 acrylates and methacrylates and unsaturated nitriles; wherein the monomers are polymerized in the presence of 5 to 35% by weight of a rubber having a glass transition temperature below 0° C.; and

D. from 3 to 20% by weight of a nitrile rubber comprising a polymer of 15 to 50 parts by weight of acrylonitrile and 85 to 50 parts by weight of butadiene wherein the polymer has a monomer viscosity in the range from 30 to 95 cps.

and wherein the weight ratio of the component B styrene-maleic anhydride polymer to component C grafted polymer composition is in the range of 90:10 to 20:80; and wherein the weight percent for Components (A), (B), (C) and (D) is based on the total amount of components (A), (B), (C) and (D) in the polyblend.

4,460,742
DELUSTERED THERMOPLASTIC RESIN COMPOSITION

Kazuo Kishida, Ohtake; Akira Hasegawa, Hiroshima, and Masahiro Sugimori, Ohtake, all of Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 204,169, Nov. 5, 1980, abandoned. This application Nov. 23, 1981, Ser. No. 324,269
Claims priority, application Japan, Nov. 26, 1979, 54-152564
Int. Cl.³ C08L *25/14, 51/06, 27/06, 33/04*
U.S. Cl. 525—64 **7 Claims**

1. A delustered thermoplastic resin composition, comprising:

100 parts by weight of a thermoplastic resin (B) selected from the group consisting of a vinyl chloride resin, an acrylic resin, a methacrylic resin, a nylon, a polyethylene, a polycarbonate, and a polyethylene terephthalate; and 0.1 to 40 parts by weight of a resin (A) which consists essentially of: 80 to 20 parts by weight of a polymer or a copolymer component (I) obtained by polymerizing;

(a) 30 to 100% by weight of at least one alkyl methacrylate in which the alkyl group has 1 to 4 carbon atoms;

(b) 0 to 70% by weight of an alkyl acrylate in which the alkyl group has 1 to 13 carbon atoms; and

(c) 0 to 50% by weight of a monoethylenically unsaturated monomer other than those of (a) and (b); and

20 to 80 parts by weight of a copolymer component (II) obtained by polymerizing;

(d) 30 to 90% by weight of an aromatic vinyl compound;

(e) 10 to 60% by weight of at least one alkyl acrylate monomer in which the alkyl group has 1 to 13 carbon atoms;

(f) 0 to 20% by weight of a monoethylenically unsaturated monomer other than those of (d) and (e); and

(g) 0.05 to 10 parts by weight of a cross-linking monomer per 100 parts by weight of the total amount of the above components (d), (e) and (f) said resin (A) being prepared by polymerizing the monomers which constitute copolymer (II) in the presence of the polymer or copolymer component (I).

4,460,743
POLYPHENYLENE ETHER RESIN COMPOSITION

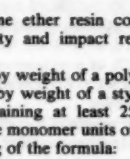
Katsuhiro Abe; Shin-ichi Yamauchi, and Akira Ohkubo, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 454,080
Claims priority, application Japan, Feb. 16, 1982, 57-22030
Int. Cl.³ C08L *61/04*
U.S. Cl. 525—68 **13 Claims**

1. A polyphenylene ether resin composition having improved proccessability and impact resistance, which comprises:

(1) 80 to 20 parts by weight of a polyphenylene ether;

(2) 20 to 80 parts by weight of a styrene homopolymer or copolymer containing at least 25% styrene monomer units, the styrene monomer units of said homopolymer or copolymer being of the formula:



wherein R^5 represents hydrogen, lower alkyl or halogen, R^6 represents hydrogen, halogen, lower alkyl or vinyl and m represents an integer of 1 to 5; and

(3) 0.1 to 50 wt%, based on the total weight of said polyphenylene ether and said styrene homopolymer or copolymer, of a polyphenylene ether grafted onto a polyolefin formed by reacting a polyphenylene ether or a polyphenylene ether having acid or acid anhydride groups with a glycidylated polyolefin or by reacting a glycidylated polyphenylene ether with a polyolefin having acid or anhydride groups.

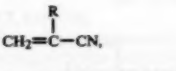
4,460,744
BLENDS OF GRAFTED ACRYLATE POLYMERS AND MASS-MADE ABS-TYPE RESINS

Henno Keskkula; Donald A. Maass, and Kathleen M. McCreedy, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 20, 1981, Ser. No. 255,956
Int. Cl.³ C08L *51/00*
U.S. Cl. 525—71 **23 Claims**

1. An innately impact resistant and tough polyblend composition that is comprised, in intimate physical admixture, of: as constituent (A) of the polyblend: between about 65 and about 99 percent by weight taken on total weight of polyblend, in the involved composition of a mass-made ABS-type resin that is comprised of:

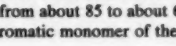
(i) from about 15 to about 35 parts by weight of a cyanoalkene of the formula:



(I)

wherein: R is selected from the Group consisting of hydrogen and a lower alkyl unit containing not more than about 4 carbon atoms therein;

(ii) from about 85 to about 65 parts by weight of an alkenyl aromatic monomer of the formula:



(II)

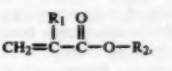
wherein G is selected from the Group consisting of hydrogen and methyl and Ar is an aromatic radical including various alkyl- and halo-ring-substituted aromatic units containing from 6 to about 10 carbon atoms; and

(iii) between about 5 and about 18 percent by weight reckoned on total weight of the involved composition of a natural or synthetic rubber ingredient;

as constituent (B) of the polyblend: between about 35 and about 1 weight percent of a grafted rubber concentrate component that is a graft copolymerized product of:

(iv) from about 40 to about 90% by wt. of a rubber substrate component upon which there is graft copolymerized;

(v) between about 60 and about 10% weight of a superstrate containing in grafted polymer component form at least about half on weight basis of polymerized monomer of the formula:



(IV)

wherein each R_1 and R_2 is independently selected from the Group consisting of hydrogen and lower alkyl units containing not more than about 4 carbon atoms; with any balance of said graft copolymerized superstrate being an other-than-acrylate monomer that is addition copolymerizable with methyl methacrylate.

4,460,745

ADHESIVE THREE-COMPONENT BLENDS CONTAINING GRAFTED HDPE

Ashok M. Adur, Elk Grove Village; Seymour Schmukler, Palatine; John Machonis, Jr., Schaumburg, and Mitsuzo Shida, Barrington, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Apr. 26, 1982, Ser. No. 372,209
Int. Cl.³ C08L 51/06, 23/26, 23/04, 23/16
U.S. Cl. 525—74 4 Claims

1. An adhesive blend consisting essentially of:

(A) medium density polyethylene comprising a branched ethylene homopolymer having a density of about 0.93–0.94 g/cc;

(B) linear low density polyethylene comprising a copolymer of ethylene and an unsaturated aliphatic hydrocarbon having a density of about 0.91–0.94 g/cc; and

(C) a HDPE polymer comprising a linear homopolymer or copolymer of ethylene having a density of about 0.94–0.97 g/cc grafted with carboxylic acids or derivatives.

4,460,746

PROCESS FOR FLEXIBILIZING EPOXIDE RESINS

Jürgen Fock, Düsseldorf; Dietmar Schedlitzki, Essen, and Holger Wacker, Essen-Überruhr, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt Ag, Fed. Rep. of Germany

Filed Dec. 10, 1981, Ser. No. 329,416
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1981, 3101343
Int. Cl.³ C08L 33/08, 33/10, 35/04, 63/10
U.S. Cl. 525—117 10 Claims

1. A method for flexibilizing epoxide resins comprising adding to the epoxide resins prior to curing, copolymers obtained by the polymerization of:

(a_1) 40 to 87 weight percent of one or more alkyl esters of acrylic or methacrylic acid having 1 to 8 carbon atoms in the alkyl radical,

(a_2) 10 to 40 weight percent of vinyl acetate or acrylonitrile,

(a_3) 1 to 20 weight percent of acrylic, methacrylic or itaconic acid,

(a_4) 1 to 5 weight percent of glycidyl acrylate or glycidyl methacrylate, and

(a_5) 0 to 35 weight percent of acrylic or vinyl monomers which are different from the monomers a_1 to a_4,

in the presence of a regulator, which contains mercapto groups and has at least one carboxyl group, wherein the copolymers having an average molecular weight of 1,000 to 3,000, as measured in a vapor pressure osometer,

in amounts such that 1 to 60 mole percent of the epoxide groups of the epoxide resins react with the carboxyl groups of the copolymer.

4,460,747

SURFACE MODIFIED POLYMERS

Vaclav Horak, Bethesda, Md., and Jiri Janata, Salt Lake City, Utah, assignors to The University of Utah, Salt Lake City, Utah

Continuation-in-part of Ser. No. 027,366, Apr. 5, 1979, Pat. No. 4,291,133. This application Aug. 27, 1981, Ser. No. 296,924
The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.
Int. Cl.³ C08L 33/10, 23/06, 27/06
U.S. Cl. 525—197 20 Claims

1. A hydrophobic polymer having a modified surface prepared by a process comprising:

(a) contacting said surface with a swelling solvent capable of swelling said polymer, whereby a swollen polymer surface is formed,

(b) contacting said swollen polymer surface with a solution of a second polymer while maintaining said swollen polymer surface in a swollen state,

said second polymer having a substantially linear backbone and a plurality of substantially linear aliphatic chains depending from and spaced along said backbone and a plurality of reactive groups as part of the polymer backbone or pendant from said polymer backbone wherein said reactive groups are selected from the group consisting of primary, secondary, and tertiary amino; amido, N-alkyl substituted amido, phosphine, carbamate, ether, ester, carboxylate, and combinations thereof, whereby said second polymer becomes bound to said polymer surface, and

(c) removing said swelling solvent from said swollen polymer surface.

4,460,748

PROCESS FOR CROSSLINKING AND, IF DESIRED, FOAMING NATURAL OR SYNTHETIC HOMO- AND/OR COPOLYMERS

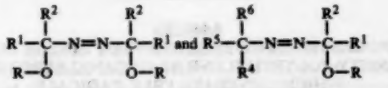
Kurt Rauer, Guenzburg, Fed. Rep. of Germany, assignor to Luperox GmbH, Fed. Rep. of Germany

Filed Jul. 6, 1982, Ser. No. 395,762
Int. Cl.³ C08F 4/00; C08J 9/10
U.S. Cl. 525—256 18 Claims

1. A process of crosslinking a polymer select from the group consisting of high pressure polyethylene of low density, low pressure polyethylene of high and low density, chlorinated polyethylene, chlorosulfonated polyethylene, polypropylene, polybutyl-(1), poly-[4-methylpentene-(1)], polyvinyl chloride, polyvinyl acetate, polyacrylic acid esters, ethylene-vinyl acetate copolymers, ethylene-propylene butylene copolymers, ethylene-propylene-diene terpolymers, ethylene-butylene copolymers, ethylene-propylene butylene copolymers, ethylene-vinyl chloride copolymers, vinyl chloride-vinyl acetate copolymers, vinyl chloride-vinylidene chloride copolymers, ethylene-carbon monoxide copolymers, natural rubber (polyisoprene), polybutadiene, polychloroprene (neoprene), synthetic polyisoprene, ethylene-propylene-ethylidene norbornene (or cyclopentadiene or hexadiene or butadiene) copolymer, butadiene-styrene copolymer, butadiene-acrylonitrile copolymer, butadiene-styrene-acrylonitrile copolymer, styrene-isoprene block polymer, butyl rubber (isobutylene-isoprene copolymer), silicone rubber, saturated polyesters, polyamides, polyurethanes, polyethers, and polyacetals comprising:

mixing with a 100 parts by weight of said polymer

(i) from about 0.02 to about 3.0% by weight of at least one member selected from the group consisting of an azo ester, an azo ether, and a mixture thereof wherein the azo ester and azo ether have the following formulas



wherein:

R is selected from the group consisting of linear or branched alkyl of 1 to 11 carbons, substituted or unsubstituted cycloalkyl of 5 to 6 carbons, substituted or unsubstituted phenyl, substituted or unsubstituted aralkyl of 7 to 15 carbons, and R^3—CO—, wherein the substituent is alkyl of 1 to 10 carbons,

R^3 is selected from the group consisting of H, linear or branched alkyl of 1 to 10 carbons, substituted or unsubstituted cycloalkyl of 5 to 6 carbons, substituted or unsubstituted phenyl, and substituted or unsubstituted aralkyl of 7 to 15 carbons, wherein the substituent is alkyl of 1 to 10 carbons,

R^1 and R^2 are independently selected from the group consisting of linear or branched alkyl of 1 to 10 carbons, substituted or unsubstituted cycloalkyl of 5 to 6 carbons, substituted or unsubstituted phenyl, and substituted or

unsubstituted aralkyl of 7 to 15 carbons, wherein the substituent is alkyl of 1 to 10 carbons,

R^1R^2C— can join together to form a group selected from substituted or unsubstituted cycloalkyl of 5 to 6 carbons wherein the substituent is alkyl of 1 to 10 carbons,

—OR and —R^1 can join together to form a member selected from the group consisting of —OCO—CH_2—CH_2— and —OCO—CH_2—CH_2—CH_2—,

R^4, R^5 and R^6 are independently selected from the group consisting of linear or branched alkyl of 1 to 10 carbons, substituted or unsubstituted cycloalkyl of 5 to 6 carbons, substituted or unsubstituted phenyl, and substituted or unsubstituted aralkyl of 1 to 10 carbons, wherein the substituent is alkyl of 1 to 10 carbons, and

R^5R^6C— can join together to form a member selected from the group consisting of substituted or unsubstituted cycloalkyl of 5 to 6 carbons wherein the substituent is alkyl of 1 to 10 carbons and

(ii) from about 0.05 to about 10% by weight of at least one crosslinking intensifier having at least two relative carbon-carbon double or triple bonds, and

heating the polymer mixture at a temperature above about 150° C. but not to the point where the polymer will substantially degrade and at a pressure of from about atmospheric to about 300 psia until crosslinking is effected.

4,460,749

RUBBER POWDERS

Christian Lindner, Cologne, and Karl-Heinz Ott, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 4, 1982, Ser. No. 336,915

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1981, 31007538

The portion of the term of this patent subsequent to Jun. 26, 2001, has been disclaimed.

Int. Cl.³ C08F *279/02*

U.S. Cl. 525—310 **3 Claims**

1. A process for the production of a free-flowing rubber powder containing particles having an average diameter of from 0.01 to 10 mm, said process comprising completely breaking a latex of a diene, acrylate or an EPDM rubber having a glass transition temperature of below 0° C. so as to form an aqueous suspension of said rubber, then introducing into said aqueous suspension from 2 to 20% by weight, based on the rubber, of at least one vinyl monomer which forms a polymer having a glass transition temperature of above 25° C., and then polymerizing said vinyl monomer in the optional presence of a radical-forming catalyst but in the absence of a suspending agent.

4,460,750

PROCESS FOR THE TREATMENT OF LINEAR LOW DENSITY POLYETHYLENE BY ORGANIC PEROXIDES WHICH GENERATE FREE RADICALS

Jean-Paul Thiersault, Saint Mitre les Remparts; Alain Senez, Callas-Cabries, and Jean L. Vidal, Martigues, all of France, assignors to BP Chimie S.A., Courbevoie, France

Filed Jun. 25, 1982, Ser. No. 392,021

Claims priority, application France, Jun. 22, 1981, 81 12184

Int. Cl.³ C08F *6/26*

U.S. Cl. 525—333.8 **8 Claims**

1. A process for treating co-polymers of linear low density polyethylene having a density of less than 0.935, a fluidity index at 190° C. under 2.16 kg as per NFT 51016 standard, Method A, of between 0.3 and 50, and a branching index greater than 0.95, in which the co-polymer is obtained by copolymerization under a pressure less than 4 MP_a, of a mixture of ethylene and a higher alpha-olefin containing 4 to 20 percent by weight of the higher alpha-olefin, comprising treating the co-polymer thermomechanically in the molten state at a temperature less than 220° C., in the presence of an organic peroxide which produces free radicals, in which the organic peroxide is employed in an amount within the range of 0.005% to 1% by weight of the co-polymer, such that the treated co-polymer has a branching index within the range of 0.8 to 0.95 and its gelling rate, as measured by extraction with boiling xylene, is zero.

4,460,751

CROSSLINKING COMPOSITION AND METHOD OF PREPARATION

David J. Hanlon, and Stephen W. Almond, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 23, 1983, Ser. No. 525,597

Int. Cl.³ C09K *3/00, 7/02*; B01J *13/00*; E21B *43/22*

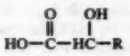
U.S. Cl. 525—371 **20 Claims**

1. A crosslinking composition comprising:

(a) water;

(b) a zirconium compound selected from the group consisting of zirconium oxychloride, zirconium acetate, zirconium tetrachloride, zirconium ortho-sulfate, zirconium carbonate, zirconium ammonium carbonate, and mixtures thereof;

(c) an alpha-hydroxy acid represented by the following formula:



wherein:

R is selected from the group consisting of hydrogen and an alkyl group having 1 to about 3 carbon atoms; and,

(d) an amine compound represented by the formula:

wherein:

R_1 is an hydroxyalkyl group having 1 to about 3 carbon atoms;

R_2 is selected from the group consisting of an alkyl group having 1 to about 3 carbon atoms and a hydroxyalkyl group having 1 to about 3 carbon atoms; and,

R_3 is selected from the group consisting of hydrogen, an alkyl group having 1 to about 3 carbon atoms, and a hydroxyalkyl group 1 to about 3 carbon atoms.

4,460,752

REACTING POLYCARBONATE RESIN WITH ARYL CHLOROCARBONATE TO IMPROVE AGING CHARACTERISTICS

Dieter Neuray; Dieter Margotte, both of Krefeld, Fed. Rep. of Germany; Erhard Tresper, Baytown, Tex., and Günter Jacobs, Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 25, 1982, Ser. No. 436,473

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143252

Int. Cl.³ C08G *63/62*

U.S. Cl. 525—462 **8 Claims**

1. A process for the preparation of a polycarbonate resin having a weight average molecular weight of at least 10,000 as determined by gel chromatography comprising reacting:

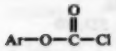
(A)

(i) at least one member selected from the group consisting of diphenols of the formula (I) HO—Z—OH wherein Z is a divalent aromatic radical and chlorocarbonic acid esters of a diphenol,

(ii) about 0.1 to 8 mol % of phenol or a substituted monophenol and

(iii) phosgene, in an organic solvent and an aqueous alkaline phase to produce a polycarbonate resin, and reacting

(B) the polycarbonate resin of said (A) in solution in the organic phase after the aqueous alkaline phase has been separated off and before any acidic wash with about 0.1 to 1 mol % of at least one aryl chlorocarbonate of the formula (II)



wherein Ar denotes a monovalent aromatic radical, said percents being relative to the mols of said (i).

4,460,753

PROCESS FOR PRODUCING VINYL CHLORIDE POLYMERS IN A COATED REACTOR AND COATING PRODUCT THEREFOR

Makoto Yamamoto, Hiratsuka; Akira Nakayama, Yokosuka, and Riso Iwata, Tokyo, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 426,094

Claims priority, application Japan, Oct. 7, 1981, 56-159754; Mar. 31, 1982, 57-52675

Int. Cl.³ C08F *2/24, 2/02, 2/20*

U.S. Cl. 526—62 **16 Claims**

1. A process for producing a vinyl chloride polymer which comprises polymerizing vinyl chloride monomer or a mixture of it with another monomer copolymerizable therewith in an aqueous medium or in bulk, characterized in that the inside of the polymerization reactor is coated beforehand with the product of reaction of an oily or waxy cyclopentadiene polymer with a phenolic compound.

4,460,754

PROCESS FOR THE MASS POLYMERIZATION OF VINYL CHLORIDE

Robert Redinger, Altötting, and Walter Berngruber, Burgkirchen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 383,537

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122614

Int. Cl.³ C08F *2/02, 2/44*

U.S. Cl. 526—75 **5 Claims**

1. In a process for the mass polymerization of vinyl chloride at 30 to 80% C under pressure and with agitation of the polymerization mixture, in the presence of at least one peroxide polymerization catalyst which decomposes to form free radicals and of at least one heat stabilizer for polyvinyl chloride, and also in the presence of up to 30% by weight, relative to the final polymerization mixture, of monomers which are copolymerizable with vinyl chloride and also in the presence of polymerization auxiliary substances but in absence of major amounts of water in two stages, the transition from the first to the second polymerization stage taking place when 6 to 20% by weight of the monomer(s) employed in the first stage have been converted into polymer, and the polymerization in the second stage being completed when 65 to 90% by weight of the total monomer(s) employed have been converted into polymer, the unreacted monomer(s) then being removed from the polymer formed down to residual contents of less than 0.001% by weight, relative to the polymer, the improvement which comprises adding without any lubricants, pigments and polymeric polymer modifiers to the polymerization mixture, in the second polymerization stage when 60 to 85% by weight of the total monomer(s) employed have been converted into polymer, but when, after the completion of the polymerization, no monomer has yet been removed from the polymerization mixture, 0.01 to 3% by weight, relative to total monomers employed, of at least one heat stabilizer selected from the group consisting of aminocrotonic acid ester and monoalkyltin (IV) or dialkyltin-(IV) compound in which the residual valencies of the tin are attached to organic radicals via sulfur atoms.

4,460,755

DIRECT CONVERSION OF A POLYMERIZATION REACTION CATALYZED BY A ZIEGLER-TYPE CATALYST INTO ONE CATALYZED BY A CHROMIUM-BASED CATALYST

Gary H. Williams, Somerville, and Frederick J. Karol, Belle Mead, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 429,089, Sep. 30, 1982, abandoned. This application Oct. 28, 1982, Ser. No. 437,365

Int. Cl.³ C08F *2/34*

U.S. Cl. 526—84 **17 Claims**

1. A process for converting a continuous olefin polymerization reaction catalyzed by a Ziegler-type catalyst comprises of (1) a transition metal halide, and (2) an organometallic compound of a metal of Groups I to III of the Mendelyveev Periodic Table, into one catalyzed by a chromium-based catalyst which comprises

(a) discontinuing the introduction of the components of the Ziegler catalyst system into the polymerization reactor;

(b) maintaining polymerization conditions in the reactor and permitting polymerization to continue for a time in order to allow the components of the Ziegler catalyst system present in the reactor to consume themselves in the production of additional polymer;

(c) introducing a hydroxyl-containing compound into the reactor, said hydroxyl-containing compound having carbon-hydroxyl or metal-hydroxyl linkages which are capable of reacting with the organometallic component of the Ziegler catalyst system to form a Lewis acid, and circulating said hydroxyl-containing compound in the reactor, while continuing to maintain polymerization conditions, for a time sufficient to allow said hydroxyl-containing compound to interact with the components of the Ziegler catalyst system; and then

(d) introducing a chromium-based catalyst into the reactor under polymerization conditions suitable for said catalyst at a rate of from 25 percent to 100 percent of the rate employed during polymerization to maintain a catalytically effective amount of such catalyst in the reactor, and maintaining said conditions until polymerization with said catalyst has initiated.

4,460,756

OLEFIN POLYMERIZATION METHOD

Max P. McDaniel; John A. Sanbrano, and Marvin M. Johnson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 250,446, Apr. 2, 1981, Pat. No. 4,397,769. This application Mar. 28, 1983, Ser. No. 479,238

Int. Cl.³ C08F *10/00*

U.S. Cl. 526—106 **18 Claims**

1. A process for preparing a polymer which comprises contacting, in an inert hydrocarbon diluent at a temperature of from about 60° to about 115° C. and a pressure of from about 1.7 to about 4.1 MPa, a monomer comprising ethylene and a chromium oxide polymerization catalyst prepared by a process comprising the steps of:

(a) heating a catalyst comprising silica-supported chromium in a nonoxidizing atmosphere in the presence of a treating agent selected from formaldehyde and substances thermally decomposable to formaldehyde and

(b) heating the thus-treated catalyst in an oxidizing atmosphere.

4,460,757

PROCESS FOR PRODUCING α-OLEFIN POLYMERS

Akihiro Sato; Masumi Tachibana; Toshihiro Uwai; Kenji Matsuda, and Yoshiharu Higuchi, all of Chibaken, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jul. 29, 1982, Ser. No. 403,105
Claims priority, application Japan, Aug. 4, 1981, 56-122190
Int. Cl.³ C08F 4/64, 10/00
U.S. Cl. 526—114 20 Claims

1. A process for producing alpha-olefin polymers which comprises:

(a) reacting one mol of an organoaluminum compound (A_1) with 0.1 to 8 mols of an electron donor (B_1) in a solvent at a temperature of −20° C. to 200° C., to obtain a reaction product (I);

(b) reacting this reaction product (I) with $TiCl_4$ at a temperature of 0° to 200° C. in a ratio of the number of Al atoms to that of Ti atoms of 0.05 to 10, to form a solid product (II);

(c) reacting 100 g of this solid product (II) with 10 to 1,000 g of an electron donor (B_2) and 10 to 1,000 g of an electron acceptor at a temperature of 40° to 200° C. to obtain a solid product (III);

(d) during or/and after the reaction step (b) or/and during or/and after the reaction step (c), subjecting the solid product (II) or (III) to a polymerization treatment of contacting the product (II) or (III) with 10 to 5,000 g of an alpha-olefin based on 100 g of the solid product (II) or (III), under the atmospheric pressure, or adding said alpha-olefin to the solid product (II) or (III) so as to give a pressure of 10 kg/cm^{2}G or lower, and at a reaction temperature of 30° to 90° C., to obtain a final solid product;

(e) containing 1 g of said final solid product from step (d) with 0.1 to 500 g of an organoaluminum compound (A_2);

(f) adding to combination of the step (e), 0.05 to 10 g of a reaction product (G) obtained by reacting 1 mol of an organoaluminum compound (A_3) with 0.01 to 5 mols of an electron donor (B_3), such reaction being carried out at a temperature of −30° to 100° C.,

(g) subjecting the product resulting from step (e) or the product resulting from step (f) to a preactivation treatment with 0.01 to 5000 g of an olefin to thereby obtain a preacticated catalyst, and

(h) polymerizing an alpha-olefin or alpha-olefins with the preactivated catalyst resulting from step (g).

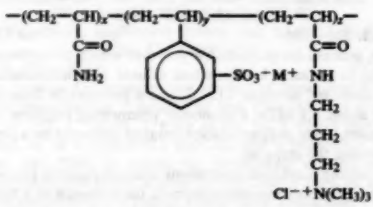
4,460,758

DRAG REDUCTION AGENTS FOR AQUEOUS SALT SOLUTIONS

Dennis G. Peiffer, East Brunswick; Robert D. Lundberg; Ralph M. Kowalik, both of Bridgewater, all of N.J., and S. Richard Turner, Rochester, N.Y., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 2, 1983, Ser. No. 547,910
Int. Cl.³ C08F 20/00
U.S. Cl. 526—287 12 Claims

1. A terpolymer for use as a drag reducing agent, said terpolymer having the formula:



wherein x is about 40 to about 98 mole %, y is about 1 to about 50 mole %, z is about 1 to about 50 mole %, wherein y and z are less than 60 mole %, and M is selected from the group consisting of amines and a metallic cation being selected from the group consisting of lead, iron, aluminum, Groups IA, IIA, IB and IIB of the Periodic Table of Elements.

4,460,759

ADHESIVE COMPOSITIONS AND BONDING METHODS EMPLOYING THE SAME

Janis Robins, St. Paul, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Nov. 20, 1981, Ser. No. 323,400
Int. Cl.³ C08F 20/34
U.S. Cl. 526—298 11 Claims

1. A two-part adhesive composition comprising an adhesive base as the first part and an accelerator portion as the second part, said adhesive base comprising (a) a polymerizable monomer of the formula

$$CH_2=C(CN)COOR^1$$

wherein R^1 is selected from the group consisting of an alkyl group of 1 to about 10 carbon atoms and an alkenyl group of 2 to about 10 carbon atoms; and (b) a stabilizer selected from the group consisting of an anionic polymerization inhibitor and a free-radical polymerization inhibitor, said stabilizer being present in an amount such that said adhesive base exhibits substantially no gelation when stored for at least about one month at 22° C., and said accelerator portion comprising a weakly acidic or weakly basic ionic accelerator compound comprising a cation M and an anion A, the pKa relating to said cation M in the equilibrium defined by

$$M(H_2O)^+ \rightleftarrows MOH + H^+$$

being at least about 10, the pKa relating to said anion A in the equilibrium defined by

$$HA \rightleftarrows A^- + H^+$$

being less than or equal to about 0, and the nucleophilicity constant of anion A being less than about 2 when cation M is an onium cation comprising more than 8 carbons, said nucleophilicity constant being determined relative to methyl iodide; said adhesive composition being further characterized in that it exhibits a set time of less than ½ that of said adhesive base alone and provides a bond which exhibits an overlap shear strength of at least about 400 pounds per square inch on maple wood.

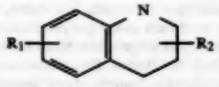
4,460,760

ANAEROBICALLY CURABLE COMPOSITIONS

Takanori Okamoto, Nakatagodgun; Takaharu Onishi, and Hideaki Matsuda, both of Marugame, all of Japan, assignors to Okura Kogyo Kabushiki Kaisha, Japan

Filed Jun. 17, 1982, Ser. No. 389,437
Claims priority, application Japan, Jun. 23, 1981, 56-95970
Int. Cl.³ C08F 20/20
U.S. Cl. 526—301 8 Claims

1. An anaerobically curable composition which consists essentially of per 100 parts by weight of a polymerizable methacrylate: 0.1 to 5.0 parts by weight of the salt of o-benzoic sulfimide with a hetereocyclic, secondary amine of the formula (I)



(I)

wherein R_1 and R_2 are hydrogen or a methyl group; 0.1 to 5.0 parts by weight of an acid amide; and 0. to 3.0 parts of a gelling stabilizer.

4,460,761

ORGANOPOLYSILOXANE COMPOSITIONS WHICH ARE STABLE UNDER ANHYDROUS CONDITIONS AND ELASTOMERS FORMED THEREFROM

August Schiller, Neuötting, and Norman Dorsch, Burghausen, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 14, 1983, Ser. No. 466,255

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3212008

Int. Cl.³ C08G 77/06

U.S. Cl. 528—18 13 Claims

1. A composition which may be stored under anhydrous conditions, but when exposed to moisture at room temperature, cross-links to from an elastomer comprising (1) a diorganopolysiloxane having terminal condensable groups, (2) a silicon compound containing at least 3 groups per molecule selected from the class consisting of amino groups which are bonded to silicon via nitrogen, oxime groups which are bonded to silicon via oxygen, and mixtures thereof, and (3) a product which is obtained from the reaction of a diorganotin diacylate with a silicon compound selected from the group consisting of (a) a silane having as hydrolyzable groups at least two monovalent hydrocarbon radicals per molecule which are bonded to silicon via oxygen and which may be interrupted by at least one ether-oxygen, and (b) an oligomer of said silane, in which all the valences of the tin atom in the reaction product are satisfied by SnC-bonded monovalent organic radicals, or by oxygen atoms of the ≡SiOSn≡ group.

4,460,762

PREPARATION OF HIGH MOLECULAR POLYTETRAMETHYLENE ADIPAMIDE

Reinoud J. Gaymans, Enschede, and Edmond H. J. P. Bour, Limbricht, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Mar. 25, 1981, Ser. No. 247,545

Claims priority, application Netherlands, Mar. 26, 1980, 8001764

Int. Cl.³ C08G 69/28

U.S. Cl. 528—335 8 Claims

1. A process for the preparation of a white, high-molecular-weight nylon 4,6 polyamide,

substantially consisting of units of

$$-NH-(CH_2)_4-NH-CO-(CH_2)_4-CO-,$$

which process consists essentially in first forming a polyamide prepolymer having a number-average molecular weight M_n less than about 10,000 by condensation reaction between 1,4-diaminobutane and adipic acid

wherein said 1,4-diaminobutane is present in an amount of from 0.5 to 15 mole % in excess of the molar amount of said adipic acid,

said polyamide prepolymer having

(1) a content of cyclic end groups not exceeding 0.20 mg equivalent per g of prepolymer, and

(2) wherein the number of amino end-groups at least equals the sum of both

(i) the number of carboxyl end groups, and

(ii) the number of any other end-groups; and thereafter after-condensing said prepolymer,

(a) in the solid phase and

(b) under a water-vapor-containing atmosphere and

(c) at a temperature of at least 200° C. to obtain a white, high-molecular-weight nylon 4,6 polymer of a number-average molecular weight M_n greater than about 15,000.

4,460,763

PREPARATION OF SMALL PARTICLE POLYBENZIMIDAZOLE

George N. Milford, Jr., Waynesboro, Va., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 290,865, Aug. 7, 1981, Pat. No. 4,394,500. This application Apr. 13, 1983, Ser. No. 484,556

Int. Cl.³ C08G 73/18

U.S. Cl. 528—336 4 Claims

1. A process for preparing small particles of polybenzimidazole comprising heating at a temperature of 120°–230° C. for a time of 1–4 hours, with stirring, a reaction mixture comprising equimolar amounts of a bis(o-diamino) substituted organic compound and a dicarboxylic organic compound, an inert nonsolvent liquid medium, and a polyphosphoric acid suspending agent, to produce a composition comprising polybenzimidazole, cooling said composition to room temperature with stirring to precipate small particles of polybenzimidazole, filtering and washing the polybenzimidazole small particles.

4,460,764

REMOVAL OF THE CATALYST FROM POLYPHENYLENE ETHERS

Rudi W. Reffert, Beindersheim; Juergen Hambrecht, Heidelberg; Adolf Echte; Hans H. Schuster, both of Ludwigshafen, and Hermann Dreher, Seeheim-Jugenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 21, 1983, Ser. No. 516,383

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1982, 3227745

Int. Cl.³ C08G 65/44

U.S. Cl. 528—487 6 Claims

1. A method of removing the catalyst in the preparation of a high molecular weight polyphenylene ether from a monohydric phenol, which is alkyl-substituted at the two ortho-positions but not at the para-position and may or may not be alkyl-substituted at the meta-position, by an oxidative coupling reaction with oxygen at from 15° to 50° C. in the presence of a catalyst complex obtained from a metal salt and an organic amine, and in the presence of from 1 to 20 parts by weight of a solvent per part by weight of the monomeric phenol, and in the presence or absence of an activator, and isolation of the metal ion component of the catalyst from the polyphenylene ether solution by means of a complex-forming or chelate-forming compound, wherein complex formation and isolation of the metal ion component of the catalyst is carried out in an aqueous medium in the presence of from 0.1 to 5,000 mg of a surfactant which must be anionic or non-ionic per kg of the organic solution of the polyphenylene ether.

4,460,765

ENZYME INHIBITOR PRODUCED BY CULTIVATION OF STREPTOMYCES MICROORGANISMS

Atsushi Naito; Fumio Nakagawa; Takao Okazaki; Akira Terahara; Seigo Iwado, and Mitsuo Yamazaki, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

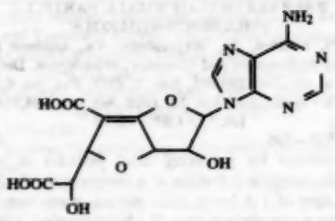
Continuation-in-part of Ser. No. 204,473, Nov. 6, 1980, abandoned. This application May 12, 1982, Ser. No. 377,435

Claims priority, application Japan, Nov. 10, 1979, 54-145701

Int. Cl.³ C12D 19/40; C07H 17/02; C12P 17/18; C12R 1/465

U.S. Cl. 536—26 7 Claims

1. Griseolic acid having the formula



and salts thereof.

2. A process for preparing griseolic acid and salts thereof, which comprises cultivating the microorganism *Streptomyces griseoaurantiacus* SANK 63479, NRRL 12314 in a culture medium therefor and separating griseolic acid or a salt thereof from the resulting culture broth.

4,460,766

DISPERSING AUXILIARY FOR PREPARING CELLULOSE ETHERS

Utz-Hellmuth Feicht, Schwalbach, and Eberhard Perplies, Walluf, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 19, 1982, Ser. No. 443,104

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1981, 3147434

Int. Cl.[3] **C08B** *11/00, 11/08, 11/145, 11/193*

U.S. Cl. 536—84 **11 Claims**

1. A process for producing a cellulose ether from cellulose and etherifying agent in a reaction mixture containing water, base and at least one organic solvent, the organic solvent comprising from 1 to 30 parts by weight of dimethoxyethane per part by weight of cellulose in the reaction mixture.

4,460,767

PROCESS FOR PRODUCTION OF SUGAR KETALS

Koichi Matsumura, Ibaraki, and Tetsuya Aono, Nagaokakyo, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 15, 1982, Ser. No. 418,266

Claims priority, application Japan, Sep. 29, 1981, 56-155071; Mar. 29, 1982, 57-50575

Int. Cl.[3] **C07H** *1/00;* **C07C** *47/18*

U.S. Cl. 536—124 **10 Claims**

1. A process for producing a sugar ketal which comprises reacting

a sugar of the class consisting of

erythrose, threose, erythrulose, arabinose, xylose, ribose, lyxose, ribulose, xylulose, glucose, galactose, talose, idose, gulose, mannose, altrose, fructose, sorbose, tagatose, and psicose, rhamnose, fucose, 2-deoxyribose, and 2-deoxyglucose, erythritol, ribitol, arabitol, mannitol, sorbitol, dulcitol, and inositol

with a ketone of the class consisting of the di-(C^{1-3}-lower alkyl) ketones and C^{5-7}-cycloalkanones

in the presence of a catalyst which is a member of the class consisting of copper, an oxide, hydroxide or salt thereof when used in presence of hydrogen chloride or hydrogen bromide or

a catalyst which is a member of the class consisting cupric chloride and cupric bromide.

4,460,768

NICKEL COMPLEX PIGMENTS OF AZINES

Abul Iqbal, Ettingen; Paul Lienhard, Frenkendorf, and André Pugin, Riehen, all of, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 149,406, May 13, 1980, Pat. No. 4,355,159. This application Dec. 16, 1981, Ser. No. 331,440

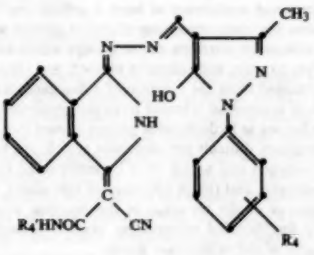
Claims priority, application Switzerland, May 23, 1979, 4842/79

The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.

Int. Cl.[3] **C09B** *57/04;* **C07D** *403/12*

U.S. Cl. 548—105 **2 Claims**

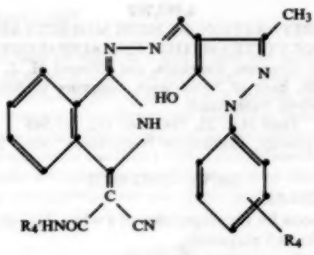
1. A 1:1 nickel complex of an azine of the formula, or of a tautomer thereof,



wherein

R_4 is hydrogen, chloro, trifluoromethyl or sulfamoyl, and R_4' is 3-trifluoromethylphenyl.

2. A 1:1 nickel complex of an azine of the formula, or of a tautomer thereof,



wherein

R_4 is trifluoromethyl or sulfamoyl, and

R_4' is 4-chlorophenyl, 3,4-dichlorophenyl or 2-methoxyphenyl.

4,460,769

THIO-AMINO-1,3,5-TRIAZINES

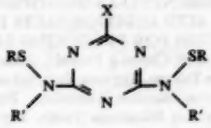
Eiichi Morita, Copley, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 312,572, Oct. 19, 1981, Pat. No. 4,380,609. This application Feb. 3, 1983, Ser. No. 463,374

Int. Cl.[3] **C07D** *251/18, 251/50, 251/52*

U.S. Cl. 544—197 **13 Claims**

1. A compound of the formula



in which R′ is hydrogen or —SR, X is hydrogen, chloro, alkoxy of 1–5 carbon atoms, alkylthio of 1–5 carbon atoms, NHR″, $N(R'')_2$ where R″ is R or allyl, NHSR, $N(SR)_2$ or R, and R is alkyl of 1–12 carbon atoms or alkyl substituted by cyano, acetoxy, or alkoxycarbonyl of 2–5 carbon atoms, cycloalkyl of 5–8 carbon atoms, aralkyl of 7–10 carbon atoms, phenyl, or phenyl substituted by chloro, alkyl of 1–5 carbon atoms, or alkoxy of 1–5 carbon atoms.

4,460,770

LIQUID CRYSTAL MIXTURE

Martin Petrzilka, Kaiseraugst; Martin Schadt, Seltisberg, and Alois Villiger, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

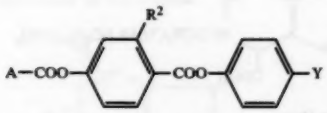
Filed Jun. 10, 1982, Ser. No. 387,108

Claims priority, application Switzerland, Jun. 18, 1981, 4038/81; Mar. 26, 1982, 1883/82

Int. Cl.³ C09K *3/34*; G02F *1/13*; G09F *9/35*; C07C *121/60*; C07D *239/60*

U.S. Cl. 544—242 **16 Claims**

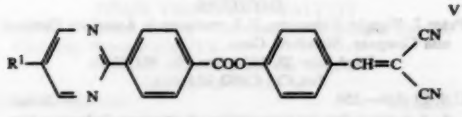
1. A compound of the formula



I

wherein R^2 is hydrogen, fluorine, chlorine, bromine or cyano; Y is 2,2-dicyanovinyl, 2,2-dicyano-1-methylvinyl or cyano and A is 4′-R^1-4-biphenylyl, p-(trans-4-R^1-cyclohexyl)phenyl, p-(5-R^1-2-pyrimidinyl)phenyl, p-[2-p′-R^1-phenyl)ethyl]phenyl, p-[2-(trans-4-R^1-cyclohexyl)ethyl]phenyl, trans-4-[2-(p-R^1-phenyl)ethyl]cyclohexyl or trans-4-[2-(trans-4-R^1-cyclohexyl)ethyl]cyclohexyl; and R^1 is straight-chain alkyl of 1 to 12 carbon atoms or when A is 4′-R^1-4-biphenylyl, p-[2-(p′-R^1-phenyl)ethyl]phenyl or trans-4-[2-(p-R^1-phenyl)ethyl]cyclohexyl, R^1 also can be straight-chain alkoxy of 1 to 12 carbon atoms.

12. A compound of the formula



V

wherein R^1 is straight-chain alkyl of 1 to 12 carbon atoms.

4,460,771

ANTIPHLOGISTIC AND ANTICOAGULANT CONDENSED PYRIMIDINE DERIVATIVES

Zoltán Mészáros; József Knoll; Péter Szentmiklósi; István Hermes; Ágnes Horváth; Sándor Virág; Leile Vasvári nee Debreczy, and Agoston David, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Filed Nov. 17, 1976, Ser. No. 742,464

Claims priority, application Hungary, Nov. 27, 1975, CI 1623

Int. Cl.³ C07D *471/04*; A61K *31/505*

U.S. Cl. 544—282 **4 Claims**

1. (±) 1,6-Dimethyl-3-carbamoyl-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2a)pyrimidine.

4,460,772

6-[N-(ω-CARBOXYALKYL)AMINO]-1,3-DIMETHYL-5-FORMAMIDOURACILS

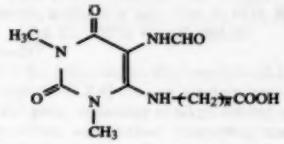
Jeffrey L. Benovic, Durham, N.C.; Robert T. Buckler, Edwardsburg, Mich.; John F. Burd, and Thomas M. Li, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 296,817, Aug. 27, 1981. This application May 11, 1983, Ser. No. 493,632

Int. Cl.³ C07D *239/54*

U.S. Cl. 544—311 **2 Claims**

1. A compound of the formula:



wherein n is an integer from 1 through 10.

4,460,773

1-PHENYL-1H-PYRAZOLO [3,4-b]PYRAZINE DERIVATIVES AND PROCESS FOR PREPARING SAME

Shinichi Suzuki, Odawara; Kunitomo Suzuki, Hatano, and Hiromitsu Honda, Yamanishi, all of Japan, assignors to Lion Corporation, Tokyo, Japan

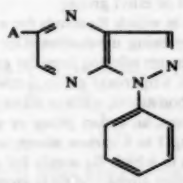
Filed Sep. 29, 1982, Ser. No. 428,016

Claims priority, application Japan, Feb. 5, 1982, 57-17227; Apr. 16, 1982, 57-63675; Apr. 16, 1982, 57-63676

Int. Cl.³ C07D *487/04*; A61K *31/495*

U.S. Cl. 544—350 **5 Claims**

1. 1-phenyl-1H-pyrazolo[3,4-b]pyrazine compounds represented by the formula (I):



(I)

wherein A stands for:

(i) a group

in which R_1 and R_2 stand for a hydrogen atom,

an alkyl group having 1 to 10 carbon atoms, said alkyl group being unsubstituted or substituted by one or two substituents selected from the group consisting of a hydroxyl group, a carboxyl group, a halogen atom, a lower alkylamino group having 1 to 6 carbon atoms, a phenyl group which is unsubstituted or substituted by one or two substituents selected from the group consisting of an alkyl group having 1 to 6 carbon atoms, a halogen atom, a nitro group and a carboxyl group;

a cycloalkyl group having 5 to 8 carbon atoms, said cycloalkyl group being unsubstituted or substituted by one or two substituents selected from the group consisting of a hydroxyl group, an alkyl group having 1 to 6 carbon atoms, a halogen atom, a nitro group and a carboxyl group; and an amino group; or

R_1 and R_2 form a nitrogen-containing saturated heterocyclic ring together with the nitrogen atom, to which R_1 and R_2 are bonded, said nitrogen-containing saturated heterocyclic ring being selected from the group consisting of pyrrolidinyl, imidazolidinyl, pyrazolidinyl, piperidinyl, piperazinyl and morpholinyl groups being unsubstituted or substituted by at least one substituent selected from the group consisting of a hydroxyl group, an alkyl group having 1 to 6 carbon atoms, a halogen atom, a nitro group and a carboxyl group;

(ii) a group

in which R_3 stands for a phenyl group, said phenyl group being unsubstituted or substituted by one or two substituents selected from the group consisting of a halogen atom, a lower alkyl group having 1 to 6 carbon atoms, a lower alkoxy group having 1 to 6 carbon atoms, a carboxyl group or a nitro group, and R_4 stands for a hydrogen atom, or a methyl or ethyl group;

(iii) a group $—OR_5$ in which R_5 stands for a phenyl group, said phenyl group being unsubstituted or substituted by one of two substituents selected from the group consisting of a halogen atom, a hydroxyl group, a lower alkyl group having 1 to 6 carbon atoms, a lower alkoxy group having 1 to 6 carbon atoms, an amino group or a lower alkylamide group having 1 to 6 carbon atoms; or

(iv) a group $—OR_6$ in which R_6 stands for an alkyl group having 1 to 10 carbon atoms said alkyl group being unsubstituted or substituted by one or two substituents selected from the group consisting of a halogen atom, an alkylamino group having 1 to 6 carbon atoms, a furanyl group, a tetrahydrofuranyl group, a phenyl group which is unsubstituted or substituted by one or two substituents selected from the group consisting of an alkyl group having 1 to 6 carbon atoms, a halogen atom, a nitro group and a carboxyl group; or

a cycloalkyl group having 5 to 8 carbon atoms.

4,460,774

1-(4-AMINOBENZYL)-2,3-DIOXOPIPERAZINE DERIVATIVES, ACID ADDITION SALTS THEREOF AND PROCESS FOR PRODUCING SAME

Takako Hori, Toyama; Chosaku Yoshida, Takaoka; Yasuo Kiba, Toyama; Ryuko Takeno, Toyama; Joji Nakano, Toyama; Jun Nitta, Namekawa; Sumiko Kishimoto, Toyama; Shohachi Murakami, Toyama; Hisatsugu Tsuda, Toyama, and Isamu Saikawa, Toyama, all of Japan, assignors to Toyama Chemical Company, Limited, Tokyo, Japan

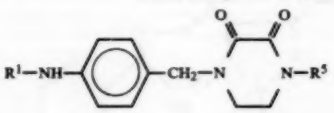
Division of Ser. No. 169,457, Jul. 16, 1980. This application Feb. 12, 1982, Ser. No. 348,271

Claims priority, application Japan, Jul. 24, 1979, 54-93234

Int. Cl.[3] **C07D** *403/10, 403/12;* **A61K** *31/495*

U.S. Cl. 544—366 **2 Claims**

1. A compound represented by the formula (I):



(I)

wherein R^1 is 2-imidazolin-2-yl, 2-imidazolyl or 2-benzimidazolyl, and R^5 is a C_{1-5}alkyl group; or a pharmaceutically acceptable acid addition salt thereof.

4,460,775

2-(3-MERCAPTO-1-OXOPROPYL)-1,2,3,4-TETRAHYDROISOQUINOLINE-1-CARBOXYLIC ACID DERIVATIVES

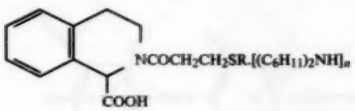
David E. Portlock, Norwich, N.Y., assignor to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Filed Aug. 9, 1979, Ser. No. 65,195

Int. Cl.[3] **C07D** *217/16;* **A61K** *31/47*

U.S. Cl. 546—147 **6 Claims**

1. A compound of the formula:



wherein R is H or

and n is 0 or 1.

4,460,776

PROCESS FOR THE PREPARATION OF 6-SUBSTITUTED-2,3-PYRIDINEDICARBOXYLIC ACID DIESTERS

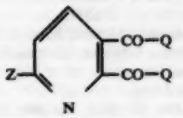
Peter J. Wepplo, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 25, 1982, Ser. No. 381,826

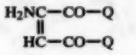
Int. Cl.[3] **C07D** *213/813*

U.S. Cl. 546—250 **6 Claims**

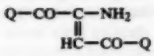
1. A method for the preparation of compounds having the structure:



wherein Q is C_1–C_4 alkoxy and Z is hydrogen, C_1–C_6 alkyl or phenyl optionally substituted with C_1–C_4 alkyl, halogen, C_1–C_4 alkoxy, nitro or C_1–C_4 alkylthio; comprising reacting an acetylenic ketone having the structure: Z—CO—C≡CH, wherein Z is as described above, with an equivalent amount of an aminomaleate having the structure:



wherein Q is as described above, or an equivalent amount of an aminofumarate having the structure:



wherein Q is as described above; in the presence of a polar solvent, optionally under a blanket of inert gas at a temperature between 50° C. and 100° C.

4,460,777

N-SUBSTITUTED-2-PYRIDYLINDOLES

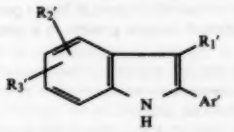
Harris B. Renfroe, West Nyack, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 323,018, Nov. 19, 1981, abandoned. This application Sep. 17, 1982, Ser. No. 419,383

Int. Cl.³ C07D *401/04*

U.S. Cl. 546—273 **2 Claims**

1. A compound of the formula



(Va)

wherein

R_1' represents hydrogen or lower alkyl;

Ar' represents pyridyl;

R_2' represents carboxy lower alkyl, lower alkoxycarbonyl lower alkyl, carboxy or lower alkoxycarbonyl; and

R_3' represents hydrogen.

4,460,778

PHASE TRANSFER CATALYSTS

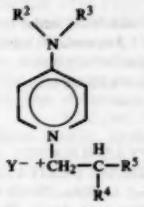
Daniel J. Brunelle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 28, 1983, Ser. No. 489,690

Int. Cl.³ C07D *213/74*

U.S. Cl. 546—304 **4 Claims**

1. A N-2-branched alkyldiorganoaminopyridinium salt of the formula,



where R^2 and R^3 are monovalent or divalent organo radicals selected from $C_{(1-13)}$ hydrocarbon radicals and $C_{(1-13)}$ substituted hydrocarbon radicals and $C_{(1-8)}$ divalent alkylene radicals which together can be part of a cyclic structure forming a $C_{(4-12)}$ ring, R^4 or R^5 is a $C_{(1-8)}$ alkyl radical, while the sum of R^4 and R^5 is a total of $C_{(2-18)}$ carbon atoms.

4,460,779

METHOD FOR PREPARING 2-LOWER ALKYL-SUBSTITUTED NAPHTHOXAZOLES BY WAY OF NON-TOXIC INTERMEDIATES

Giuliano Borro, Savona, Italy, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Oct. 2, 1980, Ser. No. 193,380

Claims priority, application Italy, Oct. 9, 1979, 50503 A/79

Int. Cl.³ C07D *498/00, 263/60*

U.S. Cl. 548—217 **10 Claims**

1. A method for preparing an alkyl-naphtho-[2,1-d]-oxazole or an alkyl-naphtho-[1,2-d]-oxazole wherein said alkyl is selected from the group consisting of alkyls having one, two, or three carbon atoms, said method comprising condensing 2-nitroso-1-naphthol or 1-nitroso-2-naphthol with an aldehyde of an alkyl having 1 to 3 carbon atoms and then reducing the resulting condensation product.

4,460,780

PROCESS FOR PREPARATION OF OPTICALLY ACTIVE THIOL COMPOUNDS

Takehisa Ohashi, Kobe; Masami Shimazaki, Takasago; Kenji Nomura, Akashi; Yasushi Nose, Takasago, and Kiyoshi Watanabe, Akashi, all of Japan, assignors to Kanegafuchi Chemical Industry Company, Ltd., Osaka, Japan

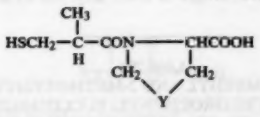
Filed Jan. 12, 1983, Ser. No. 457,377

Claims priority, application Japan, Jan. 20, 1982, 57-7803

Int. Cl.³ C07D *207/16, 277/06*

U.S. Cl. 548—201 **5 Claims**

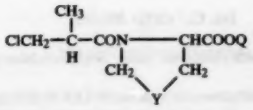
1. A process for preparation of an optically active N-(3-mercapto-2-D-methylpropanoyl)-L-amino acid represented by formula (I):



(I)

wherein Y is CH_2 or sulfur which comprises

(1) reacting an N-(3-chloro-2-D-methylpropanoyl)-L-amino acid represented by formula (II):



(II)

wherein Y is the same as defined above, and Q is hydrogen, Na, K, or NH_4.

with an alkali trithiocarbonate of which the molar ratio to the compound (II) is not less than 1.5 in water at a temperature of from about 60° C. to about 90° C.; and

(2) hydrolyzing the resulting product with an acid.

4,460,781

4-(2-BENZOYLPHENYL-1-PYAZOLE AND 4-(2-BENZOYLPHENYL)-1-PYRAZOLINE DERIVATIVES

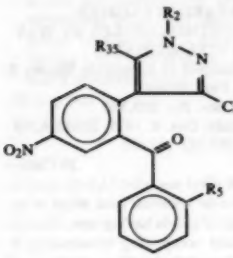
George F. Field, West Caldwell; Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 286,122, Jul. 23, 1981, Pat. No. 4,379,765, which is a continuation-in-part of Ser. No. 175,552, Aug. 5, 1980, abandoned. This application Jan. 5, 1983, Ser. No. 455,767

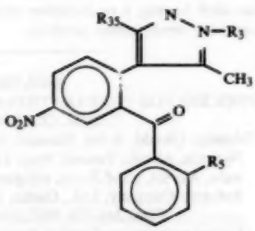
Int. Cl.³ C07D *231/06, 231/14*

U.S. Cl. 548—356 **8 Claims**

3. A compound of the formula



or



wherein R_2 and R_3 are selected from the group consisting of hydrogen, lower alkyl, C_2 to C_7 carboxylic acids, hydroxy C_2 to C_7 alkyl, C_2 to C_7 carboxylic acid esters and amides and the group COR_{11} wherein R_{11} is selected from the group consisting of alkoxy, amino or mono-lower alkyl amino; R_{35} is hydrogen or lower alkyl and R_5 is hydrogen or halo.

4,460,782

2-ETHOXYMETHYL AND 2-METHOXYMETHYL N-(3,5-DICHLOROPHENYL) SUCCINAMIDES

Norman Häberle, Munich, and Otto Eberle, Ottobrunn, both of Fed. Rep. of Germany, assignors to Consortium fur Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,569

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1980, 3030926

Int. Cl.³ C07D *207/40*

U.S. Cl. 548—547 **2 Claims**

1. 2-methoxymethylsuccinic acid N-(3,5-dichlorophenyl)imide.

2. 2-Ethoxymethylsuccinic acid N-(3,5-dichlorophenyl)imide.

4,460,783

ETHER IMIDES AND PROCESS FOR PRODUCING THE SAME

Akio Nishikawa; Masashi Shitara; Susumu Era, all of Hitachi; Toshiaki Fukushima, Ichihara; Hiroshi Suzuki, Hitachi, and Hisashi Kohkame, Narashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

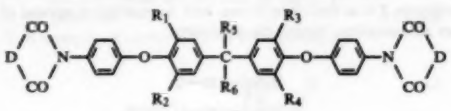
Filed Jan. 19, 1981, Ser. No. 226,029

Claims priority, application Japan, Jan. 21, 1980, 55-4636

Int. Cl.³ C07D *209/56*

U.S. Cl. 548—549 **13 Claims**

1. An ether imide of the formula:



wherein R_1, R_2, R_3 and R_4 are independently hydrogen, a lower alkyl group, a lower alkoxy group, chlorine or bromine; R_5 and R_6 are independently hydrogen, a methyl group, an ethyl group, a trifluoromethyl group or a trichloromethyl group; and D is a bivalent organic group having 2 to 24 carbon atoms.

4,460,784

FLUID-BED CATALYSTS PROCESS FOR MAKING MALEIC ANHYDRIDE

Philip H. Harju, Spring Church, and Eugene A. Pasek, Export, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 300,710, Sep. 9, 1981, Pat. No. 4,374,756. This application Sep. 7, 1982, Ser. No. 415,273

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—259 **23 Claims**

1. A fluid-bed process for making maleic anhydride by partial oxidation of an hydrocarbon, said process comprising:

passing a gaseous mixture comprising hydrocarbon and oxygen through a reaction zone containing a catalyst maintained in a fluidized state, said catalyst comprising vanadium, non-water-contained hydrogen, phosphorus and non-water-contained oxygen, at least a portion of said non-water-contained oxygen present in a pyrophosphate group.

4,460,785

ACID CHLORIDE OF PYROMELLITIC ANHYDRIDE

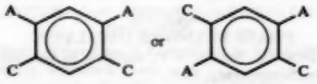
Bryce C. Oxenrider, Florham Park, and David J. Long, Stanhope, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 30, 1982, Ser. No. 429,947

Int. Cl.³ C07C *69/773, 57/72, 153/07*

U.S. Cl. 560—83 **5 Claims**

1. A compound having the structure



or mixtures thereof wherein C is COCl and A is COWQ with W being —O—, —S—, —NH— or —$N(CH_3)$—; wherein Q is alkyl of 2–24 carbons or —R—$(CF_2)_pCF_3$ with R being alkylene of 1–6 carbons and p being an integer of 3–15.

4,460,786

PROCESS FOR THE SELECTIVE ADDITION OF A COMPOUND HAVING AN ACTIVATED CARBON ATOM ONTO A SUBSTITUTED CONJUGATED DIENE

Didier Morel, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

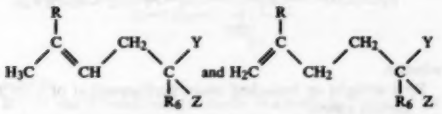
Continuation of Ser. No. 281,780, Jul. 9, 1981, abandoned. This application Jun. 7, 1983, Ser. No. 501,049

Claims priority, application France, Jul. 10, 1980, 80 15355; May 11, 1981, 81 09322

Int. Cl.³ C07L 45/68, 67/347

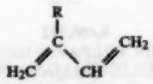
U.S. Cl. 560—126 15 Claims

1. In a process for the preparation of compounds of the formulae:



in which R is selected from the group consisting of saturated or unsaturated aliphatic radicals having from about 1 to 20 carbon atoms, and phenyl and naphthyl radicals unsubstituted or substituted by one or more alkyl radicals having from 1 to 20 carbon atoms, R_6 represents a hydrogen atom or a hydrocarbon radical, one of Y and Z represents an electron-attracting group and the other of Y and Z represents an electron-attracting or electron-donating group, with the proviso that if one of Y and Z represents an acyl radical, this can form a 5- or 6-membered saturated ring with R_6, by the reaction of a compound having an activated carbon of the formula:

in which R_6, Y and Z are as hereinbefore defined, with a buta-1,3-diene carrying a hydrocarbon substituent on the carbon atom in the 2-position of the formula:



is which R is as hereinbefore defined, in the presence of a catalyst, the improvement which consists in carrying out the said reaction in water or in an aqueous-alcohol containing up to 50% by volume of an aliphatic alcohol containing 1 to 3 carbon atoms in the presence of a catalyst which consists of at least one water-soluble phosphine and at least one rhodium compound, the catalyst being in solution in the water or in the aqueous-alcohol.

4,460,787

METAL AND ACID CATALYSIS IN SORBIC ACID PREPARATION

James P. Coleman, and Richard C. Hallcher, both of Maryland Heights, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 21, 1981, Ser. No. 332,393

Int. Cl.³ C07C 51/09, 51/377, 57/10

U.S. Cl. 562—599 11 Claims

1. In the process of converting sorbic acid precursors selected from the group consisting of acyloxyhexenoic acids, polyester of 3-hydroxy-4-hexenoic acid, γ-vinyl-γ-butyrolactone and 5-hydroxy-3-hexenoic acid lactone to sorbic acid by contact with strong acids, the improvement of using cuprous or argentous ions in conjunction with strong acid.

4,460,788

PROCESS FOR PREPARATION OF ANILINES WHICH ARE M-SUBSTITUTED BY CHLORINE

Karlfried Wedemeyer, Cologne; Ferdinand Hagedorn, Leverkusen, and Werner Evertz, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

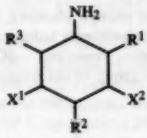
Filed Jun. 16, 1982, Ser. No. 389,127

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1981, 3127026

Int. Cl.³ C07C 85/24, 87/60

U.S. Cl. 564—412 10 Claims

1. In a process for the preparation of an aniline which is m-substituted by chlorine by the selected dehalogenation of a more highly halogenated aniline of the formula



wherein

X^1 and X^2 are identical or different and represent chlorine, hydrogen or an optionally substituted alkyl, aryl, aralkyl, alkoxy or aralkoxy radical, one of the radicals X^1 and X^2 representing chlorine in the preparation of 3-chloroaniline, and X^1 and X^2 representing chlorine in the preparation of 3,5-dichloroaniline; and

R^1, R^2, or R^3 are identical or different and represent chlorine, hydrogen or an optionally substituted alkyl, aryl, aralkyl, alkoxy or aryloxy radical, at least one of the radicals R^1, R^2, or R^3 representing chlorine,

with hydrogen in an acid medium in the presence of a noble metal, in elementary or bonded form, at an elevated temperature and pressure, the improvement which comprises carrying out the process in the presence of an optionally substituted phenol and in the absence of an iodine compound.

4,460,789

PROCESS FOR PREPARING ALKOXYLATES CONTAINING PRIMARY AMINE FUNCTIONS

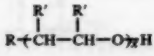
Robert V. Casciani, Long Valley, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Jun. 10, 1982, Ser. No. 387,170

Int. Cl.³ C07C 85/02

U.S. Cl. 564—504 19 Claims

1. A process for preparing alkoxylated amine derivatives which comprises reacting a monoalkanolamine compound of the formula



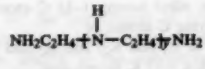
wherein R is NH_2— or NH_2—R"—,

where R" is methylene or dimethylene,

each R', independently, is hydrogen, methyl or ethyl, and

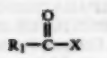
x is an integer 1 or 2,

or a polyamine compound of the formula,



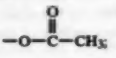
where y is 0 or an integer 1 to 3,

with a carbonyl compound of the formula

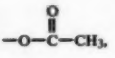


where R_1 is C_{1-10}alkyl; C_{1-10}alkoxy; phenyl; substituted phenyl; phenoxy; substituted phenoxy; benzyl; substituted benzyl; benzyloxy or substituted benzyloxy; and

X is O—R_2, where R_2 is hydrogen, C_{1-10}-alkyl, phenyl, substituted phenyl, benzyl or substituted benzyl; or a group of the formula



wherein substituted phenyl, phenoxy, benzyl or benzyloxy has one or two substituents independently selected from chloro, bromo, nitro, cyano and —SO_3H, with the proviso that when X is a group of the formula



R_1 is CH_3,

at a temperature within the range of 25° to 175° C. to form an amide- or carbamate-type condensation product, reacting said condensation product with an alkylene oxide compound or a mixture thereof at an elevated temperature and pressure in the presence of a catalytic amount of an alkaline catalyst to form an alkylene oxide adduct of said condensation product, and salifying the so-formed adduct under mild, acidic conditions.

4,460,790

SUBSTITUTED 1,11-DIAMINOUNDECANES, PROCESSES FOR PRODUCING THEM, AND THEIR USE

Dieter Reinehr, Kandern, Fed. Rep. of Germany, and Josef Pfeifer, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

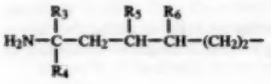
Continuation of Ser. No. 083,141, Oct. 9, 1979, abandoned. This application Jul. 31, 1981, Ser. No. 288,853

Claims priority, application Switzerland, Oct. 18, 1978, 10770/78

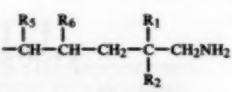
Int. Cl.³ C07C *87/14, 87/32, 87/34, 87/36*

U.S. Cl. 564—511 **8 Claims**

1. A compound of the formula I



(I)



wherein

R_1 is alkyl having 1–12 C atoms,

R_2 is hydrogen or alkyl having 1–12 C atoms,

R_3 is alkyl having 1–12 C atoms or cycloalkyl having 4–12 ring C atoms,

R_4 is hydrogen, alkyl having 1–12 C atoms or cycloalkyl having 4–12 ring C atoms, or

either or both of R_1 and R_2; and R_3 and R_4 together are alkylene having 3–11 C atoms, and

R_5 and R_6 independently of one another are hydrogen or methyl.

4,460,791

OIL RECOVERY BY FLUOROCHEMICAL SURFACTANT WATERFLOODING

Thomas W. Cooke, Mahopac, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

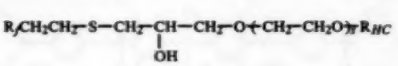
Division of Ser. No. 219,663, Dec. 24, 1980, abandoned, which is a continuation of Ser. No. 944,820, Sep. 22, 1978, abandoned. This application May 20, 1982, Ser. No. 380,372

The portion of the term of this patent subsequent to Jan. 12, 1999, has been disclaimed.

Int. Cl.³ C07C *149/18*; C11D *1/722*

U.S. Cl. 568—45 **2 Claims**

1. A compound of the formula

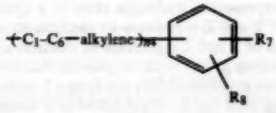


wherein

R_f is straight or branched chain perfluoroalkyl of 4 to 20 carbon atoms;

s is 5–30; and

R_{HC} is alkyl of 6–24 carbon atoms or a group of the formula



where

n_4 is 0 or 1,

R_7 is alkyl of 3–20 carbon atoms; and

R_8 is hydrogen, halo, nitro or R_7.

4,460,792

PROCESS FOR THE PREPARATION OF DELTA- AND EPSILON-DAMASCONES

Karl H. Schulte-Elte, Onex; Roger L. Snowden, Grand-Lancy, and Bernard L. Muller, Geneva, all of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

Filed Aug. 19, 1982, Ser. No. 409,516

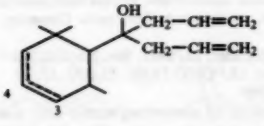
Claims priority, application Switzerland, Sep. 7, 1981, 5741/81; Oct. 15, 1981, 6597/81

Int. Cl.³ C07C *45/67, 45/51*

U.S. Cl. 568—341 **6 Claims**

1. A process for the preparation of δ- and ε-damascone which consists in

(a) treating with at least a stiociometric amount of a strong base in an inert organic solvent a diallyl carbinol of formula



(I)

wherein the dashed lines in position 3 or 4 of the ring designate a double bond, and subsequently

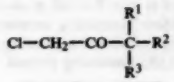
(b) isomerizing the terminal double bond of the thus obtained product by means of an acidic isomerizing agent.

4,460,793
PREPARATION OF MONOCHLOROMETHYL KETONES

Manfred Jautelat, Burscheid; Dieter Arlt, Cologne, and Gerhard Jäger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 11, 1981, Ser. No. 329,959
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1980, 3049461
Int. Cl.³ C07C 45/42
U.S. Cl. 568—405 7 Claims

1. A process for the production of monochloromethyl ketone of the formula

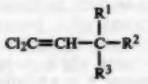


in which

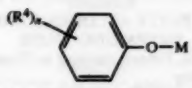
R^1, R^2 and R^3 each independently is a hydrogen atom or an (optionally substituted) alkyl, alkenyl or alkinyl radical with up to 4 carbon atoms or an aryl radical, any of the foregoing being optionally substituted by halogen, phenyl, alkoxy with up to 3 carbon atoms or phenoxy, or

R^1 and R^2 together with the carbon atom to which they are attached form a carbocyclic ring optionally substituted by methyl groups and/or alkoxycarbonyl groups with 1 to 3 carbon atoms,

comprising reacting a 1,1-dichloroalkene of the formula



with a phenolate of the formula



in which

R^4 each independently is a halogen atom, a nitro group, or an alkyl or alkoxy radical with 1 to 3 carbon atoms, or a phenyl radical,

n is 0, 1, 2, or 3, and

M is one equivalent of an alkali metal ion or alkaline earth metal ion,

at from about 50° to 250° C. thereby to obtain a phenyl ether intermediate, and then subjecting the phenyl ether intermediate to an acid hydrolysis.

4,460,794
PROCESS FOR CONTINUOUS PRODUCTION OF ALKYLBENZALDEHYDES

Susumu Fujiyama, and Shunichi Matsumoto, both of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 223,782, Jan. 9, 1981, abandoned. This application Jun. 9, 1982, Ser. No. 386,588
Claims priority, application Japan, Jan. 10, 1980, 55-1652
Int. Cl.³ C07C 45/49
U.S. Cl. 568—428 7 Claims

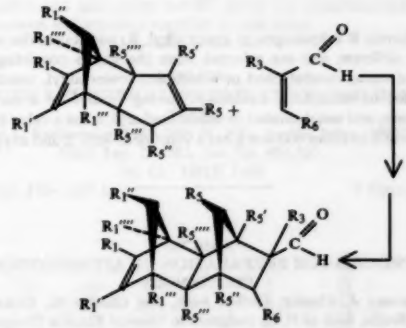
1. A process for continuously producing cuminaldehyde by formylation of cumene with carbon monoxide in the presence of hydrogen fluoride-boron trifluoride, which comprises introducing a raw material cumene into the reactor while maintaining a partial pressure of the carbon monoxide of 10–30 kg/cm² absolute and a temperature between −10° C. and −35° C., thereby effecting complexing of the cumene with hydrogen fluoride-boron trifluoride and formylation of the cumene with the carbon monoxide continuously in the reactor.

4,460,795
PROCESS FOR PREPARING MONO-OXOMETHYL SUBSTITUTED POLYHYDRODIMETHANONAPHTHALENE DERIVATIVES

Mark A. Sprecker, Sea Bright; Marie R. Hanna, Hazlet; Richard J. Tokarzewski, Keyport; Robert P. Belko, Woodbridge; Hugh Watkins, Lincroft, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 354,387, Mar. 2, 1982, Pat. No. 4,391,284. This application Mar. 24, 1983, Ser. No. 478,355
Int. Cl.³ C07C 93/16; C01C 60/74
U.S. Cl. 568—446 4 Claims

1. A process for producing at least one mono-oxomethyl substituted polyhydrodimethanonaphthalene derivative comprising the step of admixing at a pressure in the range of from about 150 psig up to about 500 psig and at a temperature in the range of from about 150° C. up to about 250° C. in the presence of or in the absence of an inert solvent, an acrolein derivative with a bicyclopentadiene derivative according to the reaction:



wherein R_1, R_1', R_1'', R_1''', R_1'''', R_3, R_5, R_5', R_5'', R_5''', R_5'''' and R_6 represent hydrogen or methyl; with the provisos:

(i) at least four of R_1, R_1', R_1'', R_1''' and R_1'''' represents hydrogen; and

(ii) at least four of R_5, R_5', R_5'', R_5''', and R_5'''' represent hydrogen,

the ratio of bicyclopentadiene derivative:acrolein derivative varying from about 0.5:1 up to about 1:0.5 and the concentration of reactants in the reaction mass varying from about 100 grams per liter up to about 500 grams per liter.

4,460,796
PURIFICATION OF POLYTETRAMETHYLENE ETHER-GLYCOLS

Herbert Mueller, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 10, 1982, Ser. No. 347,581
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107449
Int. Cl.³ C07C 41/34
U.S. Cl. 568—617 1 Claim

1. A process for the purification of polytetramethylene ether-glycols containing basic trans-esterification catalyst which comprises: adding to the polytetramethylene ether-glycol to be purified orthophosphoric acid to provide an equivalence ratio of basic catalyst to orthophosphoric acid of

from 1.5 to 2.5:3 and thereby neutralize said basic catalyst, and thereafter separating the salts that are formed from the polytetramethylene ether-glycol, producing a polytetramethylene ether-glycol, free from any inorganic impurities and having an acid or base number of zero.

4,460,797

METHOD FOR DECOMPOSITION OF HALOGENATED ORGANIC COMPOUNDS

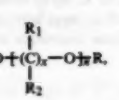
Louis L. Pytlewski; Kenneth Krevitz, both of Philadelphia, Pa., and Arthur B. Smith, Littleton, Colo., assignors to The Franklin Institute, Philadelphia, Pa.

Division of Ser. No. 240,622, Mar. 5, 1981, which is a continuation-in-part of Ser. No. 142,865, Apr. 21, 1980, abandoned. This application Jun. 13, 1983, Ser. No. 503,773

Int. Cl.³ C07C *37/00*

U.S. Cl. 568—715 **5 Claims**

1. The product of the reaction of an alkali metal hydroxide, a reactant having the general formula



wherein R is hydrogen or lower alkyl, R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, unsubstituted or substituted lower alkyl, unsubstituted or substituted cycloalkyl having from 5 to 8 carbon atoms, and unsubstituted or substituted aryl, n has a value from about 2 to about 400 and x has a value of at least 2, and oxygen.

4,460,798

PROCESS FOR PREPARATION OF ASYMMETRICAL BISPHENOLS

Howard J. Klopfer, Clifton Park, and Charles M. Orlando, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,598

Int. Cl.³ C07C *39/16*

U.S. Cl. 568—723 **8 Claims**

1. In a process for the preparation of asymmetrical bisphenols by the alkylation of at least one phenolic compound selected from the group consisting of phenol and substituted phenols having at least one unsubstituted ortho- or para-position with at least one hydroxyaryldialkylcarbinol in which the alkyl groups contain from one to about four carbon atoms in the presence of a hydrogen halide at a temperature of about 40°–60° C., the improvement which comprises adding said hydroxyaryldialkylcarbinol to a liquid mixture of said phenolic compound and said hydrogen halide under conditions such that the concentration of said hydroxyaryldialkylcarbinol in the reaction mixture is kept below about 20% by weight.

4,460,799

PROCESS FOR THE PREPARATION OF ORTHO-HYDROXYBENZYL ALCOHOLS

Robert Perrin, St. Didier au Mont d'Or, and Roger Fugier, Rantigny, both of France, assignors to Isover Saint-Gobain, Courbevoie, France

Filed Jun. 23, 1982, Ser. No. 391,467

Claims priority, application France, Jun. 25, 1981, 81 12470

Int. Cl.³ C07C *37/20, 39/12*

U.S. Cl. 568—764 **8 Claims**

1. A process for the selective preparation of ortho-hydroxy benzyl alcohol, which comprises reacting a phenol with formaldehyde in an initially anhydrous reaction medium in the presence of an aluminum or gallium phenate, with a catalyst:-phenol molar ratio of at least 0.1:100, at about 50° to 150° C. to form a reaction mixture containing unreacted phenol and ortho-hydroxy benzyl alcohol, and separating the ortho-hydroxy benzyl alcohol from the remaining phenol.

4,460,800

PROCESS FOR PREPARATION OF HYDROXYARYLDIALKYLCARBINOLS

Charles M. Orlando, Scotia, and Howard J. Klopfer, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,094

Int. Cl.³ C07C *39/10*

U.S. Cl. 568—764 **9 Claims**

1. In a process for the preparation of a hydroxyaryldialkylcarbinol by the reaction, at a temperature from about 20° to about 100° C., of (A) a solution of at least one alkylmagnesium halide in a mixed ether-aromatic hydrocarbon solvent with (B) at least one hydroxyaryl alkyl ketone or alkyl hydroxyarenecarboxylate followed by hydrolysis of the reaction mixture, the improvement which comprises effecting said reaction by adding reagent A to a solution in an ether of reagent B.

4,460,801

UNSATURATED FATTY ALCOHOLS AND METHOD OF PREPARING THEM

Didier Morel, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

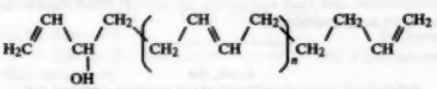
Division of Ser. No. 185,593, Sep. 9, 1980, Pat. No. 4,424,399. This application Jun. 28, 1983, Ser. No. 508,677

Claims priority, application France, Sep. 14, 1979, 79 22976

Int. Cl.³ C07C *33/02, 29/00*

U.S. Cl. 568—840 **23 Claims**

1. A process of preparing an unsaturated fatty alcohol of the formula:



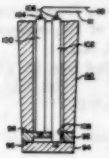
in which n=2 or 4, comprising reacting butadiene with water in the presence of a palladium salt and boric acid, $B(OH)_3$, in a polar aprotic solvent.

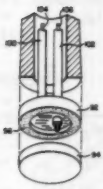
4,460,802

RADIALLY ACTIVATED THERMOCOUPLE ASSEMBLY

Robert P. Benedict, Media, and Paul Beckman, Huntingdon Valley, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh and Paul Beckman, Huntingdon Valley, both of, Pa., a part interest

Filed Dec. 15, 1982, Ser. No. 449,946
Int. Cl.³ H01L 35/02
U.S. Cl. 136—230 21 Claims





1. Thermocouple apparatus comprising:

(A) an elongated thermocouple well having a wall portion surrounding a central axis and defining an interior cavity;

(B) a thermocouple positioned at one end of said wall portion and including first and second dissimilar thermocouple elements;

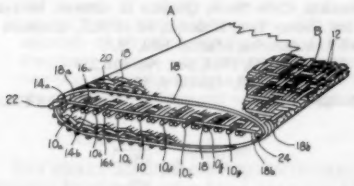
(C) said first and second thermocouple elements being arranged to respond to radial heat transfer from the outer surface of said wall portion inwardly toward said interior cavity.

4,460,803

UNITARY WOVEN JACKET AND ELECTRICAL TRANSMISSION CABLE AND METHOD OF MAKING SAME

Douglas E. Piper, Greenville, S.C., assignor to Woven Electronics Corporation, Mauldin, S.C.

Filed Feb. 15, 1983, Ser. No. 466,564
Int. Cl.³ H01B 11/06; D03D 15/02
U.S. Cl. 174—36 19 Claims



1. A jacketed unitary woven electrical transmission cable which includes an outer woven cover having outer woven cover fabric and an inner woven electrical transmission cable having woven transmission cable fabric, said unitary woven electrical transmission cable comprising:

a plurality of transmission cable warp elements which includes a number of elongated electrical conductors extending in a warp direction in said woven electrical transmission cable;

a transmission cable weft yarn woven with said transmission cable warp elements to define said woven transmission cable fabric;

said outer woven cover woven about said woven electrical transmission cable;

said outer woven cover including a cover weft yarn woven with a plurality of cover warp yarns to define said outer woven cover fabric; and

said cover weft yarn being woven with a portion of said transmission cable warp elements in said woven electrical transmission cable fabric along the length of said cable so that said woven transmission cable fabric and said outer woven cover fabric are physically attached in a one-piece woven construction.

7. A method of constructing a unitary jacketed woven electrical transmission cable of the type which includes a woven outer cover and an inner woven electrical transmission cable having a plurality of warp elements including a number of elongated electrical conductors extending in a warp direction of the cable comprising:

weaving said transmission cable warp elements and a first weft yarn together to form said inner woven electrical transmission cable;

simultaneously weaving a plurality of cover warp yarns and a second weft yarn to form said outer woven cover about said inner woven transmission cable while said transmission cable is being woven; and

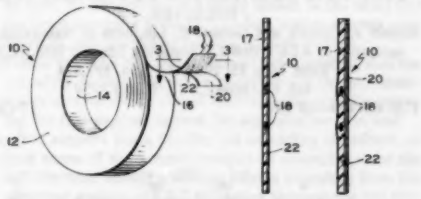
interweaving one of said weft yarns with one of said warp elements so that said inner woven electrical transmission cable and said outer woven cover are simultaneously woven and attached together as one-piece.

4,460,804

FLEXIBLE ELECTRICALLY CONDUCTIVE ADHESIVE TAPE

Roger L. Svejkovsky, 1109 20th St. NE., Austin, Minn. 55912

Filed Aug. 2, 1982, Ser. No. 404,527
Int. Cl.³ H01B 7/08
U.S. Cl. 174—117 A 7 Claims



1. A thin, flexible, electrically conductive ribbon-like adhesive tape suitable for do-it-yourself wiring comprising

(a) a thin paper-like tape backing wound into a roll,

(b) a pair of spaced apart electrical conductors,

(c) each of said conductors comprising a multiplicity of electrical wires,

(d) each of the conductors being a formerly cylindrical bundle of wires and said cylindrical bundle of wires being compressed in the plane of said tape and thereby being at least partially flattened to spread out the multiplicity of wires in the plane of the tape backing such that the tape can be wound and stored in a coil,

(e) said flattened bundle of wires having a thickness greater than a single wire and the bundle being generally oval or oblate as seen in cross section,

(f) said compression of the bundle of wires being insufficient to produce a significant loss of strength therein,

(g) said backing comprising a member selected from the group consisting of paper and flexible plastic resinous sheet materials having electrical insulating properties constructed and arranged to insulate the wires,

(h) said wires being enclosed within the tape and a layer of

pressure sensitive adhesive material on at least the lower surface of the tape to bond the tape to an underlying supporting surface while in use.

4,460,805

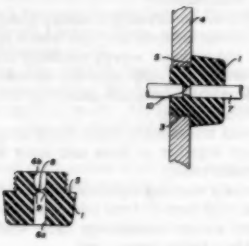
STRAIN RELIEF GROMMET

Kenneth L. Johnson, Warren, Pa., assignor to Betts Industries, Inc., Warren, Pa.

Filed May 20, 1982, Ser. No. 380,135

Int. Cl.³ H02G *3/22*; H01B *17/30*; F16L *5/00*

U.S. Cl. 174—152 G **2 Claims**



1. A grommet comprising a molded rubber body having a bore extending through the body for receiving a rubber covered wire or cable, an internal membrane normally closing said bore, said membrane having a thick rim peripherally united with the inner surface of the bore and said membrane further having a thin center section, said thick rim being so shaped and dimensioned as to permit a rubber covered wire or cable of a diameter equal to the diameter of said bore to be forced through and rupture said thin center section, said thick rim remaining after rupture of said center section.

4,460,806

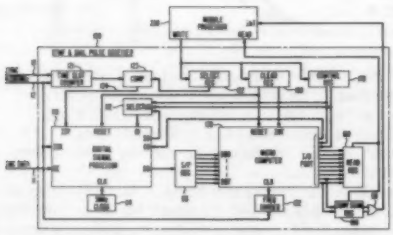
DUAL TONE MULTIFREQUENCY AND DIAL PULSE RECEIVER

Ronald J. Canniff, and Gordon K. Lin, both of Naperville, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 13, 1982, Ser. No. 377,574

Int. Cl.³ H04J *3/12*; H04Q *3/54*

U.S. Cl. 179—18 EB **17 Claims**



1. A receiver for receiving signaling from a telephone subscriber line comprising

means for generating sync pulses defining recurring cycles each comprising a first time interval and a second time interval,

means for receiving digital data words during each of said first time intervals and said second time intervals, each of said digital data words including a first portion representing an analog signal on said line and a second portion representing a DC state of said line and

detector means responsive to said sync pulses comprising time-shared means operative during said first time intervals for processing ones of said first portions of said digital data words to detect a plurality of tone-pairs on said line and operative during said second time intervals for processing ones of said second portions of said digital data words to detect a plurality of valid dial pulse sequences on said line.

4,460,807

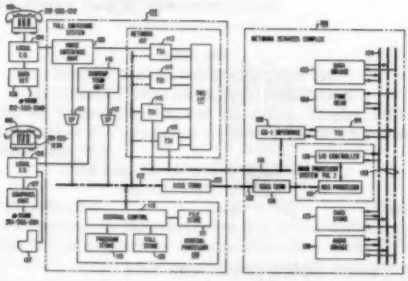
CONFERENCE ROUTING ARRANGEMENT

Howard A. Kerr, West Chicago, and David F. Winchell, Glen Ellyn, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 16, 1982, Ser. No. 450,254

Int. Cl.³ H04M *3/56*

U.S. Cl. 179—18 BC **7 Claims**



1. For use in a communication system having a switching system serving a plurality of customer stations and a conference arrangement coupled to said switching system, said conference arrangement comprising

means for bridging together a plurality of customer stations for conferencing,

means for controlling said bridging means,

means responsive to a service request signal from said switching system for ascertaining the availability of said bridging means and said control means, and

means actuated by said ascertaining means for indicating to said switching means the unavailability of said conference arrangement when either said bridging means or said control means is unavailable.

4,460,808

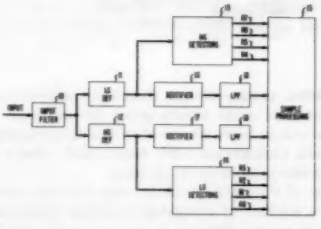
ADAPTIVE SIGNAL RECEIVING METHOD AND APPARATUS

Ralph N. Battista, Colts Neck; Quentin D. Groves, Berkeley Heights, and Jimmy Tow, Holmdel, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 23, 1982, Ser. No. 410,259

Int. Cl.³ H04M *1/50*

U.S. Cl. 179—84 VF **16 Claims**



1. A method of adapting the amplitude sensitivity of a tele-

phone system tone signal receiver to successive tone signals received from telephone stations on a per call basis, in which the receiver has an initial amplitude range for valid tone signals, said method BEING CHARACTERIZED BY the steps of

ascertaining the amplitude of a first valid tone signal received during a call, and

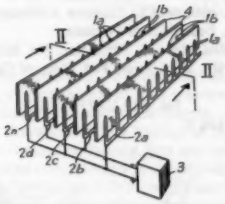
narrowing the initial amplitude range according to a prescribed algorithm based on the amplitude of the first valid tone signal for validating succeeding tone signals received during the call.

4,460,809

PROCESS AND DEVICE FOR CONVERTING A PERIODIC LF ELECTRIC VOLTAGE INTO SOUND WAVES

Henri B. Bondar, 314 rue Félix Piat, 13300 - Salon de Provence, France

Filed May 12, 1982, Ser. No. 377,416
Claims priority, application France, May 21, 1981, 81 10386
Int. Cl.³ H04R *19/02*
U.S. Cl. 179—113 **13 Claims**



1. Electro-acoustic transducer device comprising:

(a) a first assembly of elements with each having a sharp end;

(b) means for taking said first assembly to a potential sufficiently high so as to render the elements of said first assembly into a state whereby said elements of said first assembly emit ions of one polarity;

(c) a second assembly of elements with each having a sharp end;

(d) means for taking said second assembly to a potential sufficiently high so as to render the elements of said second assembly into a state whereby said elements of said second assembly emit ions of the other polarity;

(e) said first and second assemblies being arranged parallel and near of each other with all of the sharp ends of said elements directed to the same side so that an ion plasma is produced between the elements of said first assembly and the elements of said second assembly; and

(f) means for modulating the potential difference applied to elements of said first and second assemblies by a low frequency voltage which analogically represents sound waves so that said ion plasma oscillates at the frequency of the modulating voltage and emits sound waves.

4,460,810

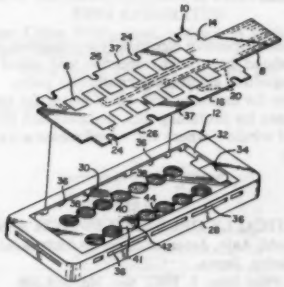
KEYBOARD SWITCH HAVING INTEGRAL BEZEL

Kazutoyo Fukukura, Reading, Mass., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 20, 1983, Ser. No. 506,162
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A **6 Claims**

1. A keyboard switch assembly of the type comprising a housing having a keyboard face, a plurality of switch sites on the keyboard face, first and second parallel conductor supports which extend parallel to the keyboard face, the supports having spaced-apart first and second opposed surfaces respectively, the first surface having circuit conductors thereon and having a plurality of pairs of spaced-apart switch electrodes, each pair of switch electrodes being in alignment with one of the switch sites, the circuit conductors extending to the switch sites, the second surface having a plurality of commoning conductors thereon, each commoning conductor being opposed to one of the pairs of switch electrodes, the first support being a continuous flexible insulating film so that upon application of a switch closing force to one of the switch sites on the keyboard face, the switch electrodes associated with the switch site are contacted with the associated commoning conductor thereby closing the switch, the switch assembly being characterized in that:

the second conductor support is firm molded plastic material and has a planar separator surface which is opposed to, and substantially against, the first surface of the first support, the separator surface having recesses therein at the switch sites, the recesses having recess surfaces which are



parallel to the first surfaces, the commoning conductors being located on the recess surfaces, the recess surfaces constituting the second surface of the switch assembly,

the second conductor support having a bezel integrally molded therewith, the bezel surrounding the separator surface, the support surface being sunken in the bezel and the bezel having a boundary surface which extends normally of, and circumscribes, the support surface,

the bezel having a plurality of bezel slots extending into the boundary surface, the first support having flexible retaining extensions which extend into the bezel slots for retaining the first support against the separator surface, and

the first support has a flexible tail extending therefrom, at least some of the circuit conductors extending onto the tail, the bezel having a tail slot therein extending from the separator surface, the tail extending through the tail slot.

4,460,811

COMBINATION SWITCHING CONNECTOR

Paul G. Murr, P.O. Box 182, and William F. Turner, P.O. Box 732, both of Sanderson, Tex. 79848

Filed Nov. 29, 1982, Ser. No. 445,208
Int. Cl.³ H01R *19/52*
U.S. Cl. 200—51.03 **7 Claims**

1. A multiple input, multiple output combination switching connector for matingly connecting a plurality of first conductors with a plurality of second conductors, comprising:

a. a housing;

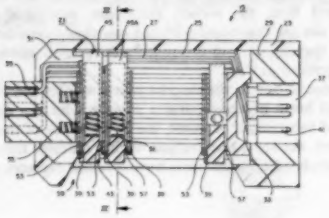
b. a plurality of respective input conductors adapted to make electrically conductive contact with the first conductors;

c. A plurality of respective output conductors adapted to make electrically conductive contact with the second conductors;

d. a plurality of respective wheel means for rotating a respective input conductor into electrical contact with a respective output conductor; each said wheel means including an electrically conductive path having an electrical conductor, and electrically conductive contact con-

nected with a respective input conductor and an electrically conductive output contact adapted to be rotated into electrical contact with a respective output conductor; said wheel means being individually rotatable within said housing;

e. means for retaining said wheel means within said housing



with their respective electrically conductive paths intact and insulated from other respective said wheel means and their respective electrically conducted paths;

f. a window for exposing said wheel means for rotation; and

g. seal means for excluding dirt, moisture and the like adjacent said window where said wheel means are exposed for rotation.

4,460,812

PNEUMATICALLY OPERATED SWITCH ASSEMBLY

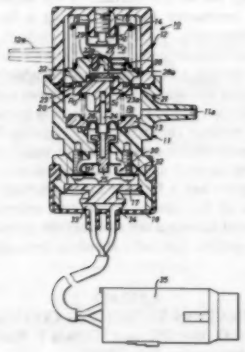
Kiyonobu Asahi, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 5, 1982, Ser. No. 355,306

Claims priority, application Japan, Mar. 11, 1981, 56-35678

Int. Cl.³ H01H *35/24*

U.S. Cl. 200—83 J **5 Claims**



1. A pneumatically operated switch assembly for controlling an electric current supply to an electric control system in accordance with a level of negative pressure applied thereto, comprising:

a housing provided with an inlet port for connection to a source of said negative pressure;

a diaphragm piston assembly mounted in said housing to subdivide the interior of said housing into first and second closed chambers, said first chamber being in open communication with said inlet port, and said diaphragm piston assembly being arranged to move to and away from a balanced position in accordance with a difference in pressure between said first and second chambers;

resilient means for biasing said diaphragm piston assembly toward said second chamber;

check valve means mounted on said diaphragm piston assembly to allow only the flow of air from said first chamber to said second chamber when said negative pressure at the source exceeds a predetermined level;

flow restriction means mounted on said diaphragm piston assembly to throttle the flow of air passing therethrough; and

switch means of the normally open type including movable and fixed contact members mounted in said housing, said movable contact member being operatively connected with said diaphragm piston assembly to engage said fixed contact member in response to movement of said diaphragm piston assembly against the biasing of said resilient means and to disengage from said fixed contact member in response to movement of said diaphragm piston assembly under the biasing of said resilient means.

4,460,813

LOAD BREAK SWITCH DRIVE MECHANISM

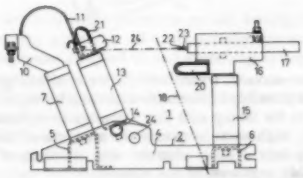
Paul Kueenzle, and Karl-Heinz Voss, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,276

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3111792

Int. Cl.³ H01H *33/12*

U.S. Cl. 200—146 R **7 Claims**



1. In a load break switch, such as a load break switch of the "swivel post" type, having a generally planar support frame with two side members and first and second cross members connecting the side members to provide support for fixed assemblies of adjacent current paths; and also having a drive mechanism comprising an actuating shaft mounted on the side members, a switch shaft and actuation components including springs coupling the actuating shaft and the switch shaft for opening and closing the switch the improvement comprising:

the actuating shaft being mounted to project beyond the side members at each side of the support frame; and

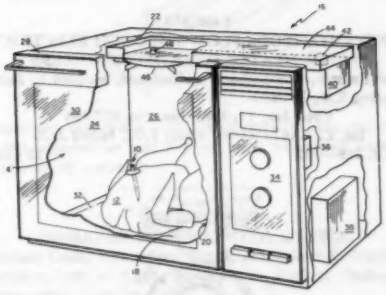
the springs being arranged generally within the plane of the support frame and the actuation components are positioned in the space between the actuating shaft and one of the cross members, wherein the actuation components include first and second guide rods mounted for reciprocal movement of the first member, first and second levers mounted on the switch shaft, a latch disc having steps and being mounted on the switch shaft, a switch opening pawl and a switch closing pawl both mounted on one side of the first cross member and connected in plier fashion around the latch disc, and biased to be received into a step thereof, and a release pin mounted on the actuating shaft to lift the switch opening pawl or the switch closing pawl out of a step of the latch disc during switch actuation, and the springs comprise opening and closing springs connected by their one ends to the first and second guide rods, respectively, and cooperating by their other ends with the first and second levers, respectively.

4,460,814

OVEN ANTENNA PROBE FOR DISTRIBUTING ENERGY IN MICROWAVE

Bradford J. Diesch, and Arnold M. Bucksbaum, both of Cedar Rapids, Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Sep. 27, 1982, Ser. No. 425,118
Int. Cl.³ H05B 6/72
U.S. Cl. 219—10.55 F **4 Claims**



1. A device for receiving, transmitting and re-radiating microwave energy from the cavity of a microwave oven into the interior of a food body positioned therein, comprising:

a rigid coaxial transmission line having an inner conductor and an outer conductor having first and second ends;

a radiating antenna comprising a probe of said inner conductor extending beyond said first end of said outer conductor, said radiating antenna probe being encased in a dielectric material having a point for inserting said radiating antenna into said food body; and

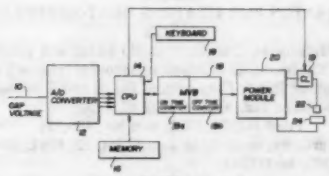
a receiving antenna comprising a probe of said inner conductor extending beyond said second end of said outer conductor and a ground plane defined by a disk connected perpendicularly to said second end of said outer conductor wherein a portion of said microwave energy radiated into said cavity is received by said receiving antenna, is transmitted along said rigid coaxial transmission line, and is re-radiated from said radiating antenna to the interior of said food body.

4,460,815

CURRENT LIMIT SYSTEM AND METHOD FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

Oliver A. Bell, Jr., Wilmington, and Randall C. Gilleland, Troutman, both of N.C., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed May 17, 1982, Ser. No. 379,070
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 M **12 Claims**



1. The method of current limiting for electrical discharge machining apparatus including means for controlling gap current and a pulse generator including an on-time and an off-time control means, comprising the steps of:

(a) preselecting a plurality of values each representative of pulse on and off-time total period and of a current limit magnitude setting;

(b) making an initial check to determine if the total period is greater than a predetermined minimum amount thus to permit any of the current limit settings and accordingly inhibiting further current limit checking and allowing machining operation to proceed; and

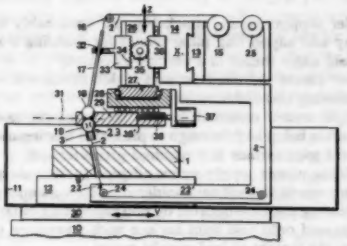
(c) if the total period is less than said predetermined amount, mathematically determining the minimum allowable pulse on/off time period by dividing the current limit magnitude setting by approximately 3 and altering the off-time accordingly.

4,460,816

APPARATUS FOR ORIENTING THE WIRE ELECTRODE SUPPORT AND GUIDE MEMBER AND THE MACHINING FLUID NOZZLE OF A TRAVELLING WIRE EDM APPARATUS

Benno Bonga, Crans, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed Jul. 6, 1982, Ser. No. 395,298
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 W **2 Claims**



1. In a travelling wire EDM apparatus wherein a workpiece is cut by electrical discharges between a wire electrode and said workpiece, said apparatus comprising a pair of guide members for said electrode wire, support means for said workpiece, and means displacing said electrode wire guide members and said workpiece support means one relative to the other such as to cut said workpiece according to a desired shape, a mechanism for orienting a unitary assembly of one of said electrode wire guide members and means for injecting machining fluid in a machining zone between said electrode wire and said workpiece, said mechanism comprising a plate, a pair of swivel joint members supported by said plate one on one side and the other on the other side of a plane of symmetry of said swivel joint members, one of said swivel joint members supporting said unitary assembly and the other being attached to a rod having a stationary pivot, said stationary pivot being disposed symmetrically relative to said plane of symmetry to the other of said electrode wire support means, and means interconnecting said swivel joint members such as to cause angular displacement of said swivel joint members symmetrically relative to said plane of symmetry.

4,460,817

RESISTANCE REFLOW SOLDERING APPARATUS

Mitsukiyo Tani, and Seiichi Kawashima, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 11, 1982, Ser. No. 387,665
Claims priority, application Japan, Jun. 19, 1981, 93797
Int. Cl.³ B23K 1/12
U.S. Cl. 219—85 D **4 Claims**

1. A resistance reflow soldering apparatus having a heating means adapted to be pressed onto a joint surface of a printed circuit board where a wiring pattern formed on said printed

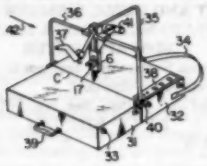
circuit board is to be jointed to an additional wire by means of a solder placed beforehand on said joint surface through heating said joint surface and melting said solder, the apparatus comprising:

a portable container including two case means for accommodating the reflow soldering apparatus, said case means including surface portions for forming a support for said printed circuit board during a soldering operation;

a heating means adapted to be positioned on said joint surface for producing enough heat to melt said solder;

supporting pillar means attachably and detachably mounted on said portable container for mounting said heating means on said portable container;

slider means connected to said heating means for enabling varying of a direction of contact of said heating means;



slider support means attachably and detachably supported by said supporting pillar means for enabling a sliding of said slider means in a vertical direction;

lever means mounted on said slider means for vertically moving said slider means;

weight means mounted on said slider means, said weight means being large enough to press said heating means onto said joint surface at a required pressure; and

welding power supply means adapted to activate said heating means to melt said solder in such a manner that said heating means supported by said supporting pillar means is pressed onto said joint surface with a pressure produced by the weight of said weight means.

4,460,818

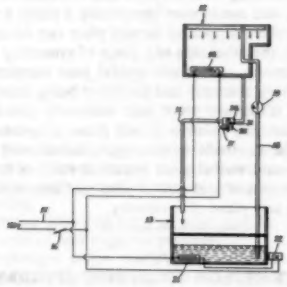
DRAIN SAFETY INTERLOCK FOR FRYERS

John A. Anetsberger, and Richard J. Anetsberger, both of Northbrook, Ill., assignors to Anetsberger Brothers, Inc., Northbrook, Ill.

Filed Oct. 30, 1981, Ser. No. 316,862

Int. Cl.[3] **A47J** *37/12;* **F16K** *35/00;* **H01H** *3/16;* **H05B** *1/00*

U.S. Cl. 219—200 **5 Claims**



1. In a deep fat fryer having a fry pot for cooking oil with a burner for heating the oil, a filter unit, and a conduit for conducting oil from said fry pot to said filter unit including a drain valve with a handle for opening and closing the same; a drain valve safety interlock for preventing inadvertent discharge of hot oil from said conduit, comprising a member normally blocking operation of said handle to open said drain valve and selectively manually movable to actuated position to permit valve-opening movement of said handle and to shut off said burner before opening of said valve.

4,460,819

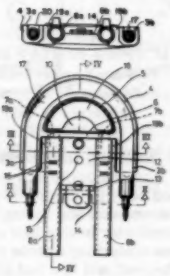
INSTANTANEOUS FLOW-THROUGH ELECTRIC WATER HEATER FOR COFFEE MAKERS

Arthur Eugster, Romanshorn, Switzerland, assignor to Intropa Trading S.A., Panama

Filed Jan. 11, 1983, Ser. No. 457,194

Int. Cl.[3] **A47J** *31/44;* **F24H** *1/12;* **H05B** *3/20*

U.S. Cl. 219—302 **10 Claims**



1. A flow-through heater for coffee percolators, consisting of a metal casting having a substantially flat bottom portion the border portions of which are formed with a receiving trough of U-shaped cross-section for receiving therein a substantially U-shaped electric heater element, and a boiling water chamber formed adjacent the foot of the U-shape of the heater element, water inflow and outflow conduits located adjacent the U-legs of said heater element opening into said boiling water chamber, said water inflow conduit being provided with heat insulation over the major portion of its length against the adjacent end of the heater element, characterized that said water inflow conduit is of a length amounting to at least 1.3 times the length of the average flow path of the water flowing through said boiling water chamber.

4,460,820

APPARATUS FOR HEATING HEAT-SHRINKABLE TUBES

Michito Matsumoto, Ibaraki; Toshiaki Kakii, and Yuichi Toda, both of Kanagawa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed Jul. 21, 1982, Ser. No. 400,531

Claims priority, application Japan, Jul. 22, 1981, 56-113608; Jul. 24, 1981, 56-116857

Int. Cl.[3] **G02B** *5/14*

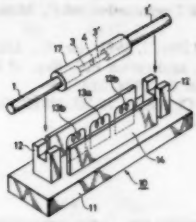
U.S. Cl. 219—385 **5 Claims**

1. An apparatus for heating a heat-shrinkable tube, comprising:

a heat shrinkable tube;

a base;

a plurality of independently operable heating units disposed along a longitudinal direction of said base, and



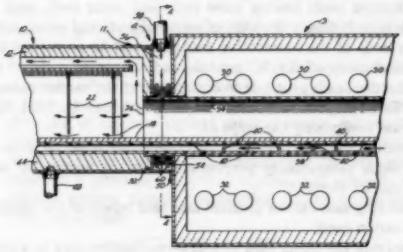
means for supporting said heat-shrinkable tube stationary and adjacent to said heating units when said units are selectively actuated.

4,460,821

INFRARED FURNACE WITH MUFFLE

N. Robert Crain, Huntington Beach, and Robert P. Hardison, Cerritos, both of Calif., assignors to Radiant Technology Corporation, Cerritos, Calif.

Filed May 25, 1982, Ser. No. 381,901
Int. Cl.[3] A21B 2/00; F27B 9/08
U.S. Cl. 219—388 17 Claims



10. An infrared furnace comprising:

a hollow tubular muffle having an entrance and an exit, the muffle being transparent to infrared energy;

a firing chamber surrounding the tubular muffle such that the entrance and exit of the muffle lie outside the firing chamber with an entrance gap and an exit gap between the muffle and the firing chamber;

a plurality of infrared lamps disposed in the firing chamber outside the muffle such that the ends of the lamps extend through the firing chamber to exterior of the furnace;

a first baffle chamber enclosing the entrance of the muffle and interfacing with the firing chamber at the entrance gap;

a second baffle chamber enclosing the exit of the muffle and interfacing with the firing chamber at the exit gap;

an entrance chamber coupling the exterior of the furnace to the first baffle chamber;

an exit chamber coupling the second baffle chamber to the exterior of the furnace;

means for transporting product through the muffle from entrance to exit thereof via the chambers;

a source of non-atmospheric gas;

means for supplying gas from the source to the baffle chambers so as to prevent the flow of atmospheric gas into the baffle chambers from the entrance and exit chambers; and

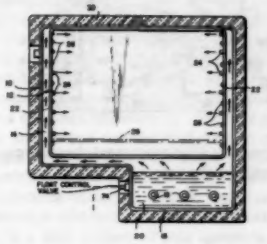
means for sealing the gap at the interface between each baffle chamber and the firing chamber.

4,460,822

PRESSURELESS STEAM COOKER

Lorne B. Alden, Crystal Lake, Ill., and Theodore A. Richardson, Revere, Mass., assignors to Market Forge, Div. of Beatrice Foods Co., Everett, Mass.

Filed Feb. 1, 1982, Ser. No. 344,818
Int. Cl.[3] A21B 1/36; F27D 7/02; F22B 1/28
U.S. Cl. 219—401 7 Claims



1. A cooker comprising, in combination, a heating chamber, a steam-generating chamber and a cooking chamber, said steam-generating chamber comprising an integral part of the heating chamber at the bottom thereof which opens into the heating chamber, said cooking chamber being of smaller horizontal cross section and smaller vertical section than the heating chamber and supported therein against the top of the heating chamber and centered with respect to the sides such that there is a continuous, open manifold space surrounding the sides and coextensive with the bottom of the cooking chamber which is in direct communication with the steam-generating chamber for receiving steam generated in the steam-generating chamber by convection, said cooking chamber having inperforate top and bottom walls and, in two opposite side walls, vertically-spaced lines of longitudinally-spaced apertures to provide communication between the manifold space and the interior of the cooking chamber, vertically-spaced tray supports on said side walls of the cooking chamber for supporting food-supporting trays, food-supporting trays supported by said tray supports between the lines of apertures, said food-supporting trays defining mutually exclusive spaces within the cooking chamber between trays to which steam is supplied exclusively from the opposite ends through said apertures such that food supported by a tray is subjected to cooking independently of the food in an adjacent tray, heating elements supported in the steam-generating chamber and a float control valve connected to the steam-generating chamber for maintaining a body of water in the steam-generating chamber.

4,460,823

DUAL MODE PEDOMETER

Gerhard Ruehlemann, Uttenreuth, Fed. Rep. of Germany, assignor to K & R Precision Instruments, Inc., Orlando, Fla.

Filed Dec. 20, 1982, Ser. No. 451,332
Int. Cl.[3] G01C 22/00
U.S. Cl. 235—105 9 Claims

1. A dual mode pedometer for indicating distance traveled by a user in walking or running comprising:

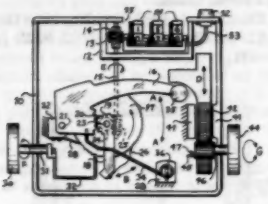
a case;

a mechanical counter disposed in said case;

counter driving means coupled to said counter, said driving means including a pendulum, said driving means for advancing said counter proportional to a length of swing of said pendulum;

first pendulum biasing means for maintaining said pendulum in an at-rest position and for restoring said pendulum to its at-rest position after movement thereof responsive to a walking stride of the user; and

second pendulum biasing means for increasing the strength of said first biasing means for restoring said pendulum to



its at-rest position after movement thereof responsive to a running stride of the user.

4,460,824

TEST REQUISITION CARD FOR AUTOMATIC ANALYZING APPARATUS

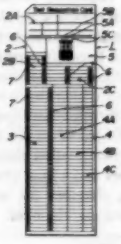
Tsuneaki Kadogaki, Tokyo, Japan, assignor to Olympus Optical Co. Ltd., Japan

Filed Nov. 9, 1981, Ser. No. 238,135

Claims priority, application Japan, Feb. 26, 1980, 55-22177

Int. Cl.³ G06K *5/00*

U.S. Cl. 235—375 **2 Claims**



1. An information card for an automatic analyzing apparatus comprising:

a sheet-like member;

a test requisition column array on said sheet-like member with spaces for patient information and test items to be recorded thereon in machine-readable form;

a test report column array on said sheet-like member with spaces for test results derived from an automatic analyzing apparatus to be recorded thereon;

an identification code label means comprising:

a non-detachable label for bearing a patient identifying code secured to said sheet-like member, and

a detachable label for bearing a patient identifying code secured to said sheet-like member and means for adhering said detachable label onto a container containing a sample derived from said patient; and

a perforation line to facilitate separation of said non-detachable label from said detachable label.

4,460,825

CARRIER ELEMENT FOR AN IC MODULE

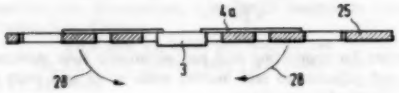
Yahya Haghiri-Tehrani, and Joachim Hoppe, both of Munich, Fed. Rep. of Germany, assignors to GAO Gesellschaft für Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,241

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1980, 3046193; Jun. 11, 1981, 3123198

Int. Cl.³ G06K *19/02;* **H01R** *43/00*

U.S. Cl. 235—488 **7 Claims**



1. A method for making a multi-layered identification card embodying an IC module by inserting a carrier element for an IC module in a recess thereof, said identification card comprising a card core and at least one cover film having slots formed therein, said IC module being mounted on the carrier element by means of a contact spider which includes a plurality of conductive leads having inner ends and outer ends, said IC module including a plurality of terminal pads and wherein the inner ends of the conductive leads connect to corresponding terminal pads of the IC module and the outer ends of the conductive leads protrude over the edge of the carrier element and form respective contact areas which can be bent, said method comprising the steps of:

bending the outer ends of the conductive leads to form an angle substantially perpendicular to the surface of said carrier element;

inserting said carrier element into said recess of the identification card;

applying the cover film to said identification card in a manner wherein the outer ends of the conductive leads are inserted through said slots of said cover film;

folding down the outer ends of the conductive leads onto the external surface of said cover film; and

pressing together the identification card and the cover film while applying heat thereto,

whereby the contact areas define external contact areas which are flush with the cover film and which provide means for electrically accessing said IC module embedded in said identification card.

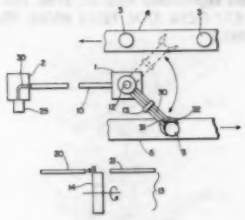
3. A carrier element for containing at least one IC module having respective terminal pads, said carrier element comprising a carrier film and a cover film for covering the carrier film, said carrier film having a front side, a reverse side, and at least one group of separate sections defined therein, an IC module being attached to the carrier film by means of a contact spider which includes a plurality of conductive leads having inner ends and outer ends, the inner ends of the contact spider being connected to corresponding terminal pads of the IC module and whereas the outer ends of the conductive leads protrude over the edge of the carrier film so that the outer ends may be freely bent, the outer ends thereby defining external contact areas which penetrate correspondingly arranged slots in said cover film, the outer ends protruding through said slots and being folded so that they lie on an outer surface of said cover film, whereby to define said external contact areas for electrically accessing said IC module embedded in said carrier element.

4,460,826

FIBER OPTIC BASED ROBOT CONTROLS

Timothy R. Pryor, Tecumseh, Canada, assignor to Diffracto Ltd., Windsor, Canada

Filed Oct. 24, 1980, Ser. No. 200,401
Int. Cl.³ G02B 5/14
U.S. Cl. 250—227 36 Claims



18. In an apparatus for controlling a robot, said robot having a moveable arm, a gripper mounted on said arm, and means for actuating said arm and said gripper for gripping an object, said apparatus comprising:

optical sensing means for sensing an object to be gripped by said gripper, said sensing means comprising means for collecting a sensing light signal from light received from the object;

detector means for detecting said sensing signal;

means for transmitting said sensing signal to said detector means;

means for generating a control signal responsive to said detected sensing signal; and

means for transmitting said control signal to said actuating means to effect gripping said object,

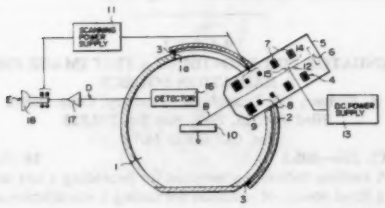
the improvement wherein said sensing mean comprises a plurality of discrete optical sensing means mounted on said gripper, wherein said detector means is located remote from said arm and said gripper, wherein said sensing signal is a plurality of optical signals, and wherein said optical sensing signals transmitting means comprises a fiber optic cable.

4,460,827

SCANNING ELECTRON MICROSCOPE OR SIMILAR EQUIPMENT WITH TILTABLE MICROSCOPE COLUMN

Akira Onoguchi, Chofu, and Shigetomo Yamazaki, Hachioji, both of Japan, assignors to Kabushiki Kaisha Akashi Seisakusho, Tokyo, Japan

Filed Jan. 5, 1982, Ser. No. 337,101
Claims priority, application Japan, Feb. 6, 1981, 56-16720
Int. Cl.³ H01J 37/00
U.S. Cl. 250—310 8 Claims



1. A scanning electron microscope or similar equipment comprising: a specimen chamber for holding a specimen to be irradiated, a microscope column enclosing an irradiation system of charged particle beams and mounted to undergo tiltable movement relative to the specimen chamber so as to irradiate the charged particle beams at different angles onto a common specimen placed in said specimen chamber, an arc-shaped opening formed in a wall portion of said specimen chamber and through which extends a base portion of said microscope column, a movable cover closing said arc-shaped opening and being generally circular and through which hermetically extends the base portion of said microscope column, said movable cover being arcuately movable to enable said microscope column to be moved arcuately in said arc-shaped opening and tilted relative to said specimen chamber, and a sealing member interposed so as to surround said arc-shaped opening between said wall portion and said movable cover.

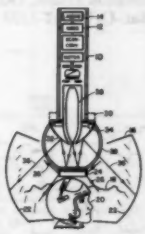
5. A scanning electron microscope or similar equipment comprising: a specimen chamber for holding a specimen to be irradiated, a microscope column enclosing an irradiation system of charged particle beams and mounted to undergo tiltable movement relative to the specimen chamber so as to irradiate the charged particle beams at different angles onto a common specimen placed in said specimen chamber, an elongated opening formed in a wall portion of said specimen chamber and through which extends a base portion of said microscope column, a movable cover closing said elongated opening and having a length at least twice the longitudinal direction length of said elongated opening and through which hermetically extends the base portion of said microscope column, said movable cover being slidably movable in the longitudinal direction of said elongated opening to enable said microscope column to be moved in said elongated opening and tilted relative to said specimen chamber, and a sealing member interposed so as to surround said elongated opening between said wall portion and said movable cover.

4,460,828

FLUORESCENCE QUENCHING TECHNIQUE FOR SCANNING VISUAL SYSTEMS

James F. Harvey, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1982, Ser. No. 373,756
Int. Cl.³ G03B 21/00
U.S. Cl. 250—329 11 Claims



1. An improvement in scanning display systems to increase brightness in the display, wherein said systems include a screen for presenting a scanned image and a projection system providing said scanned image, comprising:

means for illuminating said screen with ultra-violet light;

means associated with said screen that is responsive to said ultra-violet illumination for fluorescing under illumination by said ultra-violet light means; and

means associated with said projecting system for adapting said projecting system to scan said image onto said screen in a negative mode with infrared light;

wherein said fluorescence is selectively quenched by said scanned image at portions on said screen corresponding to darker portions of said image and the brightness of other por-

tions of said image is enhanced by said fluorescence, such that a bright display of a positive image is provided.

4,460,829

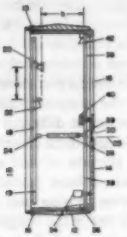
INFRARED INTRUSION DETECTOR WITH RESPONSE INDICATOR LIGHT

Richard Settanni, and Ronald G. Avery, both of Bethel, Conn., assignors to Cerberus AG, Mannedorf, Switzerland

Filed May 17, 1982, Ser. No. 379,140

Int. Cl.³ G01J *5/08*

U.S. Cl. 250—342 **3 Claims**



1. In a passive infrared intrusion detector, wherein an infrared detecting element is enclosed within an enclosure and responsive to infrared radiation incident through an aperture in one wall of said enclosure, and wherein there is provided a light source in said enclosure, visible through an opening in said enclosure for indicating detection of an intruder by said detector, the improvement wherein said light source is separated from said opening and wherein there is provided a light conduit for conducting light from said light source to said opening.

4,460,830

PORTABLE RADIATION MEASURING DEVICE

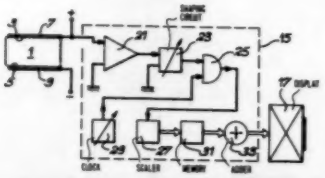
Robert Allemand, Saint Ismier; Michel Laval, Grenoble, and Pierre Parot, Seyssinet, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 19, 1981, Ser. No. 312,789

Claims priority, application France, Oct. 24, 1980, 80 22814

Int. Cl.³ G01T *1/22*

U.S. Cl. 250—370 **13 Claims**



1. Portable radiation measuring device, comprising a detector adapted to deliver electrical signals whose amplitude spectrum depends in a one-to-one relationship on the energy spectrum of a radiation capable of being received by the detector, amplification means and electronic means for compensating the sensitivity of the detector as a function of the energy so as to render it identical to that of human tissues, producing an output signal which is in a constant ratio with the energy of said radiation which may be absorbed by human tissues, and display means connected to the amplification and compensation means, for displaying the dose of radiation received by the detector.

4,460,831

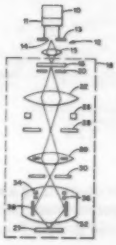
LASER STIMULATED HIGH CURRENT DENSITY PHOTOELECTRON GENERATOR AND METHOD OF MANUFACTURE

Peter E. Oettinger, Acton, and Chunghsin Lee, Reading, both of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 325,960, Nov. 30, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,514

Int. Cl.³ G21K *5/04*; H01J *40/06, 40/16*

U.S. Cl. 250—492.2 **22 Claims**



1. An electron beam generator comprising:

a continuous wave (CW) laser;

a modulator for varying the intensity of, or deflecting, the optical output beam of said laser at modulation rates of at least several megahertz;

a photoemissive cathode positioned for illumination by the output beam of said laser, said cathode including a substrate optically transmissive to said laser light, said substrate having a back side facing in a direction to receive an optical output beam of said laser and a front side opposite said back side, an electrically conductive film deposited on a selected region of the front side of said substrate, said film optically semitransparent to said laser light, a film of photoemissive substance selected from the group consisting of cesium antimonide, sodium potassium antimonide, cesiated gallium phosphide, cesiated gallium arsenide phosphide, and cesiated and oxygenated gallium arsenide, said film being deposited on said electrically conductive, optically semitransparent film and operable to emit a high current density, rapidly modulable beam of electrons upon illumination by said laser; and a thick, electrically conductive, metallic coating adjacent to said selected region and in electrical and thermal contact with said electrically conductive, optically semitransparent film; and

a light optical train positioned between said laser and said cathode and operable to produce with the output beam of said laser a pattern of laser light on said photoemissive cathode such that said film emits a high current density, rapidly modulable beam of electrons to form an electron image determined by said pattern and which is suitable for directwrite semiconductor lithography.

4,460,832

ATTENUATOR FOR PROVIDING A TEST IMAGE FROM A RADIATION SOURCE

Keith E. Bigham, 178 Triangle St., Danbury, Conn. 06810

Filed Jun. 15, 1981, Ser. No. 273,923

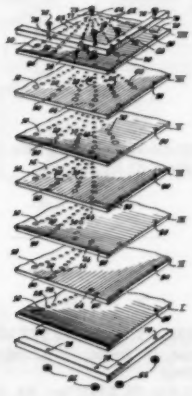
Int. Cl.³ G01D *18/00*

U.S. Cl. 250—505.1 **14 Claims**

1. A nuclear radiation attenuator for providing a test image from a flood source of radiation for testing a scintillation camera comprising:

a plurality of stackable plates formed of radiation attenuating material and selected so that a plate provides a background region of substantially uniform background radiation passed therethrough from said flood sources, each of said plates having a generally uniform thickness;

said plates each including a plurality of apertures which form discrete target regions located in the background region of the plate, each target region enabling the transmittal of radiation from said flood source with an intensity that differs from the radiation passed through said background region to provide for each target region a desired target to background intensity contrast ratio between it and said background region, said apertures being regularly distributed over a plate to enable examination of the



linearity of said camera, and with the size of said apertures being selected to provide an indication of the spatial resolution of said camera and wherein wherein the apertures in the plates are so located that when said plates are stacked, first target regions each have a material thickness that is different from the combined plates background region thickness and wherein second target regions have a material thickness that is different from the thickness of said first target regions and said combined plates background region.

4,460,833

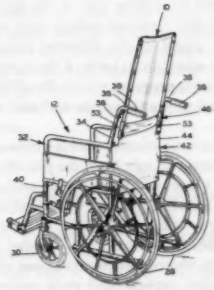
RADIATION SHIELDED WHEEL PATIENT TRANSPORT

Herbert Malamud, Westbury, and Herman Glasser, Manhasset Hills, both of N.Y., assignors to Victoreen, Inc., Cleveland, Ohio

Filed Jan. 22, 1982, Ser. No. 341,611

Int. Cl.³ G21F *3/00*

U.S. Cl. 250—519.1 **1 Claim**



1. In a wheelchair assembly having a pair of spaced apart side frames and a patient supporting means therebetween, a radiation shield adapted to protect an attendant pushing the wheelchair from radiation applied to a patient sitting in the wheelchair, comprising:

a flexible sheet of radiation shielding material;

a pair of spaced apart, generally vertically extending support members attached to said sheet of radiation shielding material; and

means for attaching each of said vertically extending support members to a respective one of the wheelchair side frames such that said sheet of radiation shielding material functions both as a backrest to support a patient and as a shield to protect an attendant from radiation applied to the patient, said support members and said sheet of radiation shielding material extending upwardly above the head of the patient supported by the wheelchair to provide additional shielding protection for the attendant.

4,460,834

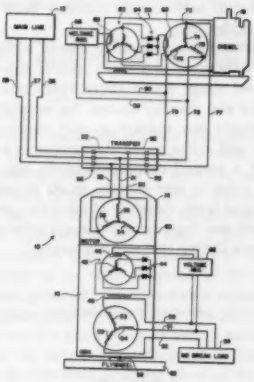
UNINTERRUPTIBLE POWER SYSTEM

Carlos F. Gottfried, Mexico City, Mexico, assignor to Power Group International Corp., Houston, Tex.

Filed Aug. 29, 1983, Ser. No. 527,264

Int. Cl.³ H02P *9/42*; H02J *9/06*

U.S. Cl. 307—64 **20 Claims**



1. A power system for providing an uninterruptible power supply to an external load comprising:

flywheel generator means adapted to supply energy to said external load;

first motor means adapted to be connected to a source of power external of said power system, said first motor means drivingly connected to said flywheel generator means, said flywheel generator means being electrically isolated from said source of power external of said power system;

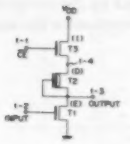
standby generator means switchably electrically connected to said first motor means; and

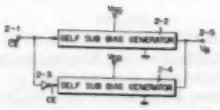
transfer control means adapted to switchably interconnect said first motor means to said source of power and to switchably interconnect said standby generator means to said first motor means, said transfer control means causing said standby generator means to respond to interruptions in said source of power.

4,460,835
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH LOW POWER CONSUMPTION IN A STANDBY MODE USING AN ON-CHIP SUBSTRATE BIAS GENERATOR

Fujio Masuoka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 6, 1981, Ser. No. 260,994
Claims priority, application Japan, May 13, 1980, 55-63061; May 13, 1980, 55-63062; May 13, 1980, 55-63063; Oct. 15, 1980, 55-143931; Oct. 15, 1980, 55-143932
Int. Cl.³ H03L 5/00; H03K 17/693
U.S. Cl. 307—296 R **14 Claims**





1. A semiconductor integrated circuit device comprising:

a semiconductor logic circuit operable both in active and standby modes; and

on-chip substrate bias generating means, including an input terminal responsive to a mode control signal having first and second signal levels respectively corresponding to said active and standby modes, for providing a first on-chip substrate bias voltage to said semiconductor logic circuit in said active mode in response to said first signal level and a second on-chip substrate bias voltage of a different value in said standby mode in response to said second signal level, thereby reducing the power consumption of both said logic circuit and said substrate bias generating means during said standby mode.

4,460,836
DEVICE USING SIGNAL INTEGRATION AND STORING TYPE IMAGE SENSING MEANS

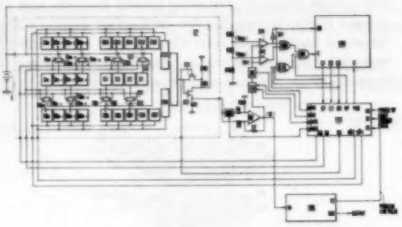
Tokuichi Tsunekawa, Kanagawa; Kazuya Hosoe, and Makoto Masunaga, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha

Continuation of Ser. No. 182,798, Aug. 29, 1980, abandoned. This application Jun. 27, 1983, Ser. No. 508,981
Claims priority, application Japan, Sep. 5, 1979, 54-114000
Int. Cl.³ C06Q 4/12; H03K 3/42
U.S. Cl. 307—311 **5 Claims**

1. A device comprising:

integration and storing type radiation sensing means responsive to radiation incident thereon and arranged to produce and store an electrical indication corresponding to integration of said incident radiation during an integration time; and

control means for controlling the integration and storing operation of said sensing means, said control means controlling the integration and storing operation of the sensing means so as to make the time interval between each of the starts of the integration and storing operations of the

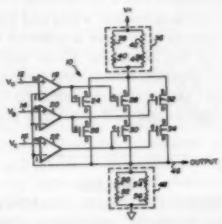


sensing means coincident with a time interval of an integer multiple of about 50 milliseconds.

4,460,837
FAULT TOLERANT ANALOG SELECTOR CIRCUIT

Robert L. Anderson, Jr., Salem, Oreg., assignor to August Systems, Tigard, Oreg.

Filed Jun. 14, 1982, Ser. No. 387,927
Int. Cl.³ G06G 7/12; H03K 5/22
U.S. Cl. 307—355 **14 Claims**



1. An analog selector circuit for providing an analog output signal of a value approximate to the median value of the analog input signals, the circuit comprising:

a plurality of comparator means equal in number to the number of analog input signals, each comparator means being connected to receive one of the said input signals and comparing said received analog input signal with said analog output signal of the selector circuit whereby a voltage output signal from each of the comparator means is generated that is proportional to the difference in voltage of said analog input signals and said analog output signal;

a plurality of electronic control valves connected to receive said voltage output signals from the plurality of comparator means, the valves being connected such that a number of said valves equal in number to the majority of analog input signals are connected in series to form a series combination and there are a sufficient number of such series combinations to receive all combinations of said majority of voltage output signals, and each series combination connected to receive a voltage potential input signal and providing the output signals of said series combinations to a common terminal to form said analog output signal; and

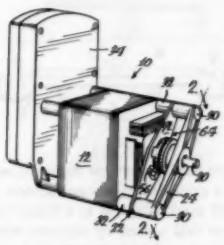
a resistive network connected between said common terminal and a reference potential.

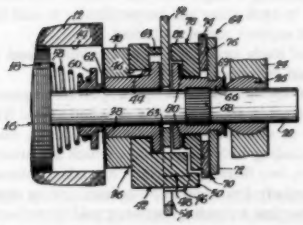
4,460,838

ELECTRIC MOTOR WITH BRAKING ARRANGEMENT

Dennis J. Ulicny, Carpentersville, Ill., assignor to ECM Motor Co., Schaumberg, Ill.

Filed Aug. 6, 1982, Ser. No. 405,748
Int. Cl.³ H02K 7/10
U.S. Cl. 310—76 18 Claims





1. An electric motor, comprising:
a motor frame;
a stator assembly connected to said frame;
rotor means extending through said stator assembly supported by said motor frame for rotation with respect thereto and with respect to said stator assembly; and
brake means operatively disposed on said rotor means, including stop means held against rotation with said rotor means and movable axially with respect to said rotor means between engaged and disengaged positions, said stop means being maintained in said disengaged position by the magnetic field created by said stator assembly during operation of the motor so that said rotor means is rotatable with respect to said motor frame, said stop means moving to said engaged position when said motor is not operating, said brake means further including a stop member carried by said rotor means and rotatable with said rotor means during motor operation, said stop means being adapted for engagement with said stop member to operatively connect said stop member to said motor frame in said engaged position so that said brake means act to prevent retation of said rotor means with respect to said motor frame.

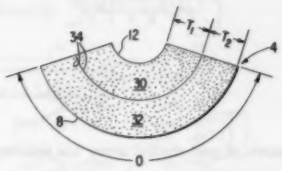
4,460,839

MAGNETIC LAMINAE SECTIONS FOR SINGLE AIR GAP MOTOR

Wolfgang Jaffe, Roselle Park, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 9, 1980, Ser. No. 157,597
Int. Cl.³ H02K 21/26
U.S. Cl. 310—154 5 Claims

1. In a dynamoelectric machine having a nonmagnetic cylindrical armature with commutated windings thereon, and means rotatably mounting said armature about the cylindrical axis thereof and coaxially within a single air gap formed by a plurality of peripheral spaced permanent magnets, said magnets formed substantially of equal size and annular shape are equally spaced about and concentric to said axis wherein each of said magnets subtends an arc of predetermined angular displacement and comprises a plurality of laminae having interfacing surfaces which are formed substantially normal to a



radius of said axis which intersects said magnet, wherein said plurality of laminae comprises two laminae having respective thicknesses t_1 and t_2 wherein the ratio of t_1 to t_2 is arranged so that when said magnets are exposed to a second predetermined ambient temperature subsequent to being stabilized at a first predetermined ambient temperature there is no substantial permanent loss of magnetism of said magnets.

4,460,840

TEMPERATURE COMPENSATED PIEZOELECTRIC ACTUATOR ARRANGEMENT

Günter Weiger, Esslingen; Paul Schwerdt, Freundenstadt, and Heimut Hirn, Dusslingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 28, 1982, Ser. No. 372,571
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1981, 3116687
Int. Cl.³ H01L 41/08
U.S. Cl. 310—328 7 Claims

1. An electrically controlled actuator arrangement including a temperature compensated piezoelectric transducer means, the transducer means comprising at least one stack of piezoelectric oxide discs, a mechanical throw transmitting means arranged in series with the transducer means, the transmitting means includes a plurality of levers so as to provide at least a two stage transmission action, the plurality of levers are disposed side-by-side in an axial direction of the plate means, connector means provided for connecting adjacent levers to each other, a plane-parallel plate means, the plurality of levers are integrated into the plate means in such a manner that, in a rest position of the actuator arrangement, at least one force introduction point lies flush with one plane of the plate means, and at least one force deployment point lies flush with an opposite plane face of the plate means.

4,460,841

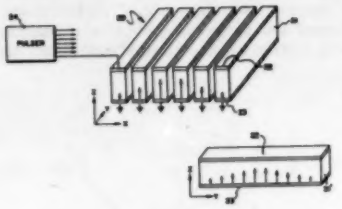
ULTRASONIC TRANSDUCER SHADING

Lowell S. Smith, Schenectady, N.Y., and Axel F. Brisken, Shingle Springs, Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 16, 1982, Ser. No. 349,143
Int. Cl.³ H01L 41/04; H04R 17/00
U.S. Cl. 310—334 5 Claims

1. A linear phased array ultrasonic transducer having X-axis and Y-axis shading comprising: a plurality of long, narrow piezoelectric ceramic transducer elements each having electrodes on opposite surfaces, the polarization of said elements varying as a function of position in the X-axis direction along the array depending on a selected shading function, and varying in the Y-axis direction parallel to the long dimension of

every element such that the polarization is greater at the center and decreases symmetrically toward either end, whereby the



radiation pattern of said shaded array has reduced side lobe levels.

4,460,842

PIEZOELECTRIC DEVICE WITH HIGH, CONSTANT PRELOAD FORCE

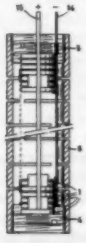
Jan W. Waanders; Herman F. van Heek; Roger A. Colson, and David J. Perduijn, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1982, Ser. No. 447,084

Claims priority, application Netherlands, Dec. 8, 1981, 8105502

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—338 7 Claims



1. A piezoelectric device comprising two end plates, a plurality of stacked, flat plates of a polarizable piezoceramic material arranged between said two end plates, a plurality of thin metal plates arranged one each between respective adjacent piezoceramic plates, two electric conductors, means for electrically connecting the metal plates in alternation to a respective one of said two conductors, and means for mechanically interconnecting said end plates, said means including a preloading element for subjecting the stack of plates to a preload force,

characterized in that the device is so arranged that each of said metal plates is held in direct contact with the piezoceramic material of the adjoining piezoceramic flat plates by the preloading force only, and

the preloading element is arranged to provide a relatively large preload force,and to have a flat spring characteristic over the working range of extension of the piezoelectric device.

4,460,843

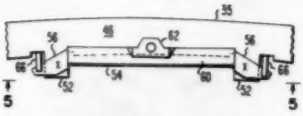
COLOR PICTURE TUBE HAVING IMPROVED TEMPERATURE COMPENSATING SUPPORT FOR A MASK-FRAME ASSEMBLY

Frank R. Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1982, Ser. No. 373,051

Int. Cl.³ H01J *29/07*

U.S. Cl. 313—406 4 Claims



1. In a color picture tube of the type including an evacuated envelope enclosing a cathodoluminescent screen, an electron gun and an apertured mask attached to a frame which is suspended in relation to said screen by support means, an axis passing through the center of said electron gun and the center of said screen being the longitudinal axis of said tube, said screen also including a major axis and a minor axis which are perpendicular to each other and perpendicular to said longitudinal axis, said support means including

a plurality of studs embedded in said envelope and spaced around said frame, and

a plurality of springs, each having an aperture engaged with one of said studs, and each being attached to said frame, at least one of said springs being a bow spring, said bow spring including two end portions which are attached to said frame, two flexible step risers extending substantially perpendicularly from said end portions, and an elongated resilient portion extending between said step risers, said resilient portion being inclined with respect to said longitudinal axis and approximately paralleling one of said major and minor axes, said resilient portion including a centrally located aperture in engagement with one of said studs, and said step risers being flexible to accommodate bowing of said elongated resilient portion.

4,460,844

MAGNETIC FOCUSING, THREE IN-LINE GUN TYPE COLOR PICTURE TUBE

Soichi Sakurai, Yokohama; Kyohei Fukuda, Fujisawa, and Kuniharu Osakabe, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 329,045

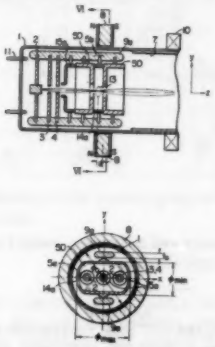
Claims priority, application Japan, Dec. 15, 1980, 55-175814; Jun. 8, 1981, 56-86937

Int. Cl.³ H01J *29/51, 29/68*

U.S. Cl. 313—412 10 Claims

1. A magnetic focusing cathode-ray tube of three in-line gun type comprising magnetic field forming means provided externally of a neck portion of said tube, at least a pair of pole pieces made of magnetic material having high permeability arranged opposing each other within said neck portion in the axial direction of the tube so as to effectively absorb magnetic flux from said magnetic field forming means and to form magnetic focusing lens systems in a gap between said pole pieces, each of said pair of pole pieces including a base plate of a substantially elliptical configuration as viewed from a plane perpendicular to the tube axis, said base plate being provided with in-line beam passing through-holes, and a substantially elliptical cylindrical flange extending from the periphery of said base plate, said flanges of said pair of pole pieces extending in opposite

directions in the tube axial direction, and support members disposed in respective spaces between said pair of pole pieces



and an inner wall of said neck portion to support as a unit cathode and grid electrodes and said pair of pole pieces.

4,460,845

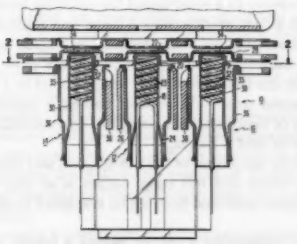
RIGID CATHODE SUPPORT STRUCTURE FOR AN IN-LINE ELECTRON GUN ASSEMBLY

Martin K. Brown, Lancaster, and Kenny S. Richard, Ephrata, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 1, 1981, Ser. No. 326,348

Int. Cl.³ H01J *29/04, 29/50*

U.S. Cl. 313—417 **6 Claims**



1. In an electron gun assembly having a center cathode disposed between two outer cathodes, each of said cathodes being supported by a separate cathode support assembly comprising a cathode eyelet and a beading support member, wherein each of said beading support members varies in dimensions as a function of temperature and the center beading support member stabilizes at a higher operating temperature than the outer beading support members, each of said beading support members having opposite ends which are embedded in a pair of oppositely-disposed insulating support rods, the improvement comprising means for maintaining said temperature dependent variations in dimensions of said outer beading support members substantially equal to one another and greater than the temperature dependent variations in dimensions of said center beading support member thereby rigidly affixing said cathodes to said support rods.

4,460,846

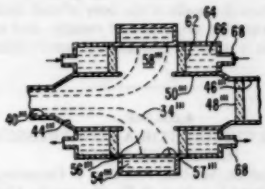
COLLECTOR-OUTPUT FOR HOLLOW BEAM ELECTRON TUBES

Norman J. Taylor, Wenham, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 251,612, Apr. 6, 1981, abandoned. This application Jul. 1, 1983, Ser. No. 510,465

Int. Cl.³ H01J *23/02*

U.S. Cl. 315—5.38 **6 Claims**



1. In a gyrotron type microwave electron tube:
means for generating a hollow beam of electrons;
means for supporting an electromagnetic wave in energy exchanging interaction with said beam;
circular waveguide means of generally uniform cross-section and coaxial with said beam for conducting energy from said interaction to an external load in a mode having circular electric fields;
said waveguide defining therein a transverse gap for passage of said beam outwardly of said waveguide; and
a hollow electron collector coaxial with and outside said waveguide, and surrounding said gap.

4,460,847

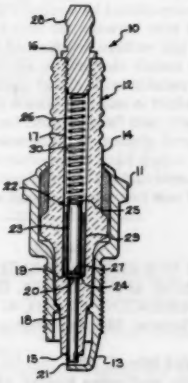
SPARK PLUG

Clyde R. Englehardt, Sylvania, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Jul. 27, 1981, Ser. No. 287,261

Int. Cl.³ H01T *1/16, 13/40*

U.S. Cl. 315—58 **8 Claims**



1. A spark plug comprising a shell releasably engageable with an internal combustion engine, an insulator assembly carried by said shell and a ground electrode structurally integral with said shell, said assembly comprising an insulator having a firing end and a terminal end, and a bore extending therethrough, a center electrode within the bore of said insulator, and having a firing end in spark gap relationship with said ground electrode and an opposed end, an electrically conducting terminal seated in the terminal end of said insulator, a

resistor having opposed ends and a resilient, electrically conductive member seated within the bore of said insulator and positioned between the opposed end of said center electrode and said terminal, one of the opposed ends of said resistor being in electrical contact with one of said terminal and the opposed end of said center electrode, and said resilient member being compressed between and exerting a force against the other of the opposed ends of said resistor and the other of said terminal and the opposed end of said center electrode, and an electrically nonconductive and substantially gas-impervious seal compacted between the walls of the bore of said insulator and longitudinally extending walls of said resistor, said seal being positioned so that it is not in contact with said resilient member.

4,460,848

STARTER CIRCUIT FOR A LOW PRESSURE DISCHARGE LAMP

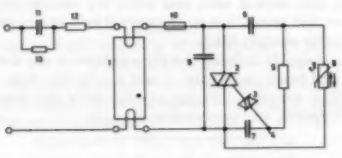
Hans-Jürgen Fähnrich, Munich, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft für Elektrische-Glühlampen, Munich, Fed. Rep. of Germany

Filed Dec. 2, 1981, Ser. No. 326,498

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1980, 3047289

Int. Cl.³ H05B *39/00, 41/14*

U.S. Cl. 315—101 **13 Claims**



1. A starting circuit for a low-pressure discharge lamp comprising a triac connected in parallel to the discharge bath of said low-pressure discharge lamp and in series with the heater electrodes of said lamp, a voltage divider connected in parallel to said lamp in the same manner as said triac and having a tap at the junction of a first branch of said divider and a second divider branch constituted by a capacitor, a diac connected for control of said triac between the gate electrode of said triac and the tap of said voltage divider, and further comprising

at least one circuit element (**6, 17**) having an impedance which is variable with circuit operating circumstances, being provided in said first branch of said voltage divider in series with said fixed resistor, and,

a second circuit element of circumstantially variable impedance (**8**), which has a temperature-dependent resistance, bridged across said capacitor of said second branch and a portion of said first branch of said voltage divider.

4,460,849

DEVICE FOR REGULATING THE POWER IN ELECTRICAL APPARATUSES, ESPECIALLY IN FLUORESCENT LIGHTING FITTINGS

Kalervo M. Virtanen, Metsäpekkalantie 2, 15610 Lahti 61, Finland

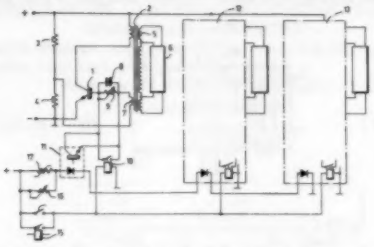
Filed Mar. 8, 1982, Ser. No. 355,609

Claims priority, application Finland, Mar. 30, 1981, 810982

Int. Cl.³ H05B *37/02, 39/04, 41/36*

U.S. Cl. 315—209 R **4 Claims**

1. A circuit for regulating the electrical power supplied to a plurality of fluorescent lighting fixtures, comprising a plurality of inverter circuits connected across a DC source, each inverter ciruit including an oscillator transistor, each fluorescent lighting fixture being connected to a separate inverter circuit which includes an adjustable RC circuit connected in the control circuit of said oscillator transistor, and the contacts of a relay means and an opto-insulator being connected in parallel with said RC circuit of the control circuit of each oscillator transistor, and a common switch for controlling all of the



relays of said inverter and a common control means for controlling all of the opto-insulators.

4,460,850

DEFLECTION CIRCUIT FOR CATHODE-RAY TUBES

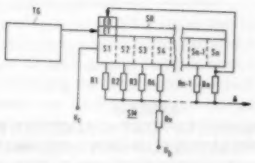
Laurin C. Freyberger, Bahlingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 28, 1981, Ser. No. 258,501

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018712

Int. Cl.³ H01J *29/70, 29/72*

U.S. Cl. 315—367 **9 Claims**



1. A deflection circuit comprising:

a squarewave clock pulse generator;

an n-stage serial input shift register, where n is the number of resolution steps of the deflection period, said shift register having a clock input coupled to said pulse generator, an input responsive to a reset signal for resetting each of the n stages to a first predetermined state, and a serial signal input, said serial input being coupled to a fixed potential such that each time said register receives a pulse at said clock input the first one of said n-stages is set to a second predetermined state, said register having n parallel outputs, each of said n outputs being the corresponding output of one of said n stages;

means coupling the output of the nth stage to said reset input such that when said nth stage output is at said second predetermined state said reset signal is applied to said reset input;

said decoder comprising a circuit having n inputs, each of said n inputs being coupled to a corresponding one of said n outputs, said circuit generating an output sawtooth signal having an instantaneous magnitude corresponding in value to the number of said n outputs which are at said second predetermined state; and

deflecting means controlled by said sawtooth signal.

4,460,851

COMBINED DYNAMIC FOCUS CIRCUIT FLYBACK CAPACITOR

William R. Bistline, and Stephen C. Hatcher, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

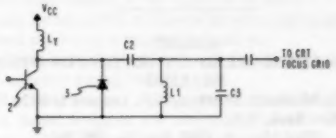
Filed Sep. 28, 1981, Ser. No. 306,560

Int. Cl.³ H01J *29/70, 29/76*

U.S. Cl. 315—408 **8 Claims**

1. In a CRT display system utilizing a semiconductor switch in the fast scan axis output stage of a flyback beam deflection

circuit, the improvement comprising a resonant circuit coupled to said flyback circuit for production of a dynamic focus



voltage waveform and for providing the only flyback capacitance of the circuit.

4,460,852

METHOD OF CONTROLLING MILL MOTORS SPEEDS IN A COLD TANDEM MILL

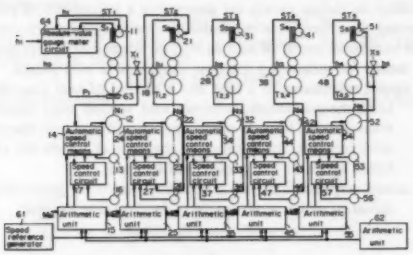
Katsuya Kondo, Amagasaki, and Shigeru Tajima, Wakayama, both of Japan, assignors to Sumitomo Kinzoku Kogyo Kabushiki Gaisha, Osaka, Japan

Filed Jan. 29, 1982, Ser. No. 344,058

Claims priority, application Japan, Feb. 6, 1981, 56-17288

Int. Cl.³ B21B *37/00*

U.S. Cl. 318—67 **6 Claims**



1. A method for controlling the revolving speed of a mill motor which drives a stand of rollers in a cold tandem mill, comprising the steps of:

producing a speed control signal to drive said motor at a predetermined reference speed;

generating a drooping characteristic control signal which modifies said speed control signal to produce a decrease in motor speed in response to an increase in motor current;

monitoring the inter-stand tension of the strip being rolled and comparing the detected tension to predetermined limits;

generating a correction signal to compensate the effects of said drooping characteristic control signal on motor speed when the detected tension is within said limits; and

enabling said drooping characteristic control signal to modify said speed control signal without compensation when the detected tension is outside said limits.

4,460,853

GYROSCOPE WHEEL DYNAMIC BRAKING AND SEQUENCE INHIBIT CIRCUIT

James A. Quinn, Ridgewood, N.J., assignor to The Singer Company, Little Falls, N.J.

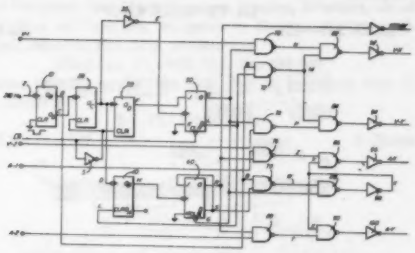
Filed Mar. 24, 1983, Ser. No. 478,562

Int. Cl.³ H02P *7/74, 3/22*

U.S. Cl. 318—86 **13 Claims**

1. In an inertial measuring unit including a gyroscope wheel, an electric induction motor having at least two phases for rotating said gyroscope wheel and means for generating control signals for controlling said electric induction motor, including a first control signal, a second time-varying periodic control signal and multiphase control signals phased such as to develop a driving torque in said electric induction motor, the improvement comprising:

logic means, coupled to said means for generating control signals and said electric induction motor and having said



first and second control signals as inputs, for coupling said second control signal simultaneously and substantially in phase to each of the phases of said electric induction motor in response to said first control signal so as to develop a braking torque in said electric induction motor.

4,460,854

CONTROL DEVICE FOR A VIBRATING ARMATURE MOTOR

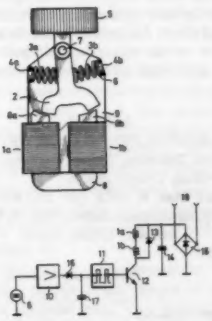
Anton Bauer, Kelkheim, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,348

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1981, 3139523

Int. Cl.³ H02K *33/00, 33/02*

U.S. Cl. 318—114 **13 Claims**



1. A vibrating armature motor, comprising:

a voltage source;

an armature;

an electromagnet having at least one exciter coil disposed adjacent said armature;

biasing means for rotationally biasing said armature;

sensor means for sensing the velocity of said armature and for generating a sensor signal proportional to said sensed velocity;

variable duty cycle pulse generating means for receiving said sensor signal and for generating a stream of triggering pulses, the duty cycle of said triggering pulses being dependent upon the characteristics of said sensor signal; and

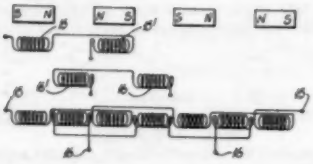
electronic switch means for receiving said triggering pulses and for controlling the flow of current from said voltage source and through said exciter coil in response to said triggering pulses.

4,460,855

LINEAR MOTOR

Hugh-Peter G. Kelly, 66 Westleigh Ave., Leigh on Sea, Essex, England

Filed May 18, 1981, Ser. No. 264,394
Claims priority, application United Kingdom, May 19, 1980, 8016410
Int. Cl.³ H02K 41/03
U.S. Cl. 318—135 20 Claims



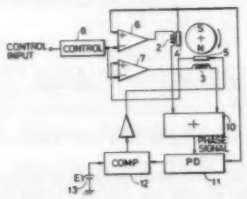
1. A linear motor comprising an armature and a stator each movable relative to one another along a lengthwise axis of the motor and each having a plurality of magnetic flux generators, which are each coaxial with said axis, each plurality providing a respective sequence of north and south poles along the length of said axis, one of the sequences being relatively long and spanning the range of desired relative axial movement of the armature and stator and the other being relatively short, the generators of one sequence being mutually axially spaced to provide gaps therebetween and having permanent magnets as the flux generators thereof and the generators of the other sequence comprising at least two independently energisable coils as the flux generators thereof, and means to enable the energisation of said coils, the pole pitches of the stator and the armature being different from one another so that, when one such coil overlies a flux generator of said one sequence, an independently energisable coil of the second sequence overlies the gap between an adjacent pair of flux generators of said one sequence and vice versa whereby with appropriate energisation of said coils by said means the difference in pole pitch of the armature and stator can result, in use, in a net thrust of the armature relative to the stator in a desired direction at any location within said range of relative movement.

4,460,856

TWO-PHASE BRUSHLESS MOTOR DRIVING CIRCUIT

Katsuji Mizumoto, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 9, 1983, Ser. No. 473,423
Claims priority, application Japan, Mar. 9, 1982, 57-32869[U]
Int. Cl.³ H02K 29/02
U.S. Cl. 318—254 9 Claims



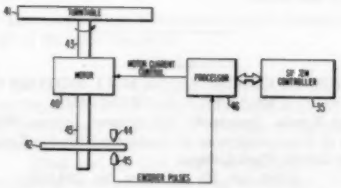
1. A two-phase brushless motor driving circuit comprising; first and second drive loops for driving a first phase coil and a second phase coil with first and second currents, respectively, in accordance with signals generated by sensing elements representing the respective relative positions between a rotor of said motor and said first and said second phase coils, means for generating a sum signal representing a sum of the said first and second currents flowing into both of said first and second phase coils, and means for controlling a loop gain of one of said first and second drive loops such that a difference in phase between said sum signal and one of said signals representing said relative positions, assumes a predetermined value.

4,460,857

ENCODER CONTROLLED APPARATUS FOR DYNAMIC BRAKING

Theodore D. Michaelis, Medford, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 31, 1983, Ser. No. 499,794
Int. Cl.³ H02P 3/20
U.S. Cl. 318—375 15 Claims



1. In a system including a motor wherein braking is effectuated by the application thereto of reverse current, said system further including means for generating a succession of pulses having time durations substantially inversely proportional to the rotational speed of said motor, an apparatus comprising:

means for measuring the time durations of said pulses;

means responsive to a first and a second of said time durations measurements, wherein said second time duration measurement is made subsequent to said first time duration measurement, for computing the time at which the rotational speed of said motor will be zero;

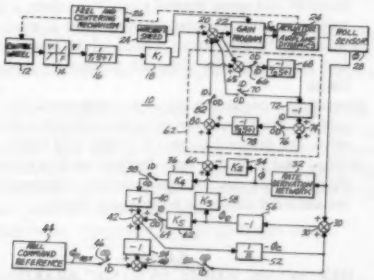
means responsive to said computing means for generating a signal to cause interruption of said reverse current.

4,460,858

AUTOPILOT ROLL CONTROL WHEEL STEERING SYSTEM

Robert F. Ashland, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 11, 1982, Ser. No. 377,103
Int. Cl.³ B64C 13/18; G05D 1/08
U.S. Cl. 318—585 11 Claims



1. An autopilot roll command steering system for controlling aircraft roll in response to control wheel roll command, the system comprising:

transducer means for producing an output signal representative of the control wheel roll command;

means for producing a signal ϕ representative of the aircraft's roll position;

means for producing a signal $\dot{\phi}$ representative of the first time differential of said ϕ signal;

integrator means for producing an output signal ϕ_c equal to the time integral of the signal at its input;

means for taking the difference between said ϕ_c and ϕ signals and producing a roll error signal ϕ_e;

means for coupling said ϕ and ϕ_e signals to the input of the integrator means; and

means for producing a signal proportional to the sum of said ψ, ϕ_e and ϕ signals, and coupling the resultant signal to the aircraft control surfaces to control roll of the aircraft.

4,460,859

STEPPING MOTOR ASSEMBLY

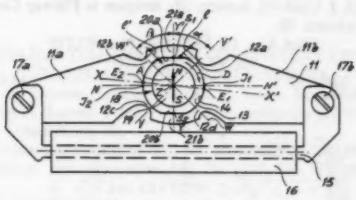
Hans-Jürgen Rémus, St-Aubin, Switzerland, and Luciano Antognini, Champaign, Ill., assignors to Asulab S.A., Bienne, Switzerland

Filed Jan. 27, 1983, Ser. No. 461,292

Claims priority, application Switzerland, Jan. 28, 1982, 517/82; Jul. 1, 1982, 4011/82

Int. Cl.³ H02K *29/02*

U.S. Cl. 318—696 **24 Claims**



1. A stepping motor assembly comprising:

a bidirectional stepping motor having

a rotor including a permanent magnet with at least one pair of opposed magnetic poles which define an axis of magnetization,

a stator provided with a central opening delimited by an inner wall surface and within which said rotor is mounted for rotation about an axis, said stator comprising opposed first and second pole pieces which partly surround the rotor and are connected to each other on one side of said rotor by means of a first intermediate part and first and second connecting part between said first intermediate part and said second and first pole pieces respectively, and on the other side of said rotor by means of a second intermediate part and third and fourth connecting parts between said second intermediate part and said first and second pole pieces respectively, said connecting parts being arranged to form areas having a low magnetic permeance with regard to said pole pieces,

a coil coupled magnetically to said stator, and

positioning means for defining two rest positions of said rotor in which said axis of magnetization is directed along an axis of static equilibrium which intersects said intermediate parts; and

a control device for delivering driving pulses to this motor.

4,460,860

METHOD AND APPARATUS FOR INCREASING THE MAXIMUM SPEED OF ROTATION OF A SYNCHRONOUS MACHINE WITH A GIVEN EXCITATION FIELD STRENGTH AND TERMINAL VOLTAGE

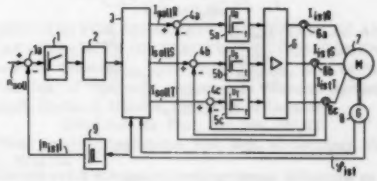
Günter Schwesig; Hartmut Vogt, both of Erlangen; Erich Voss, Bad Neustadt, and Hans-Hermann Zander, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 14, 1983, Ser. No. 458,040

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3203911

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—721 **8 Claims**



1. In a control system for a synchronous machine having a rotor and a stator and having an exciting field of constant electromagnetic field strength and including a converter connected in series with the armature of the synchronous machine and an alternating current electrical supply network, the converter having an alternating current reference value as a control input, the phase of said current reference value controlled in dependence on the position of the rotor of the synchronous machine and the amplitude of said current reference value controlled in dependence on a first speed reference value, the converter having an output coupled to the synchronous machine for controlling the speed of rotation of the rotor of the synchronous machine, and further including means for determining the absolute value of the actual speed n_{ist} of the rotor of the synchronous machine $|n_{ist}|$, the synchronous machine having at least one pair of input terminals, the terminal voltage across said input terminals comprising the vector sum of a voltage drop in the stator and a magnet-wheel voltage induced by the rotor, said input terminals being coupled to the output of the converter, the method for increasing the maximum speed of rotation of the rotor of the synchronous machine comprising the steps of:

generating a first signal proportional to the ratio of the absolute value of the actual speed of the rotor of the synchronous machine $|n_{ist}|$ to a second speed reference value n_o, said second speed reference value being a predetermined value of the speed of rotation of the rotor for which the sum of the magnet-wheel voltage and the voltage drop in the stator is equal to the maximum output of the converter;

limiting, for absolute values of actual speeds $|n_{ist}|$ greater than said second speed reference value, the amplitude of the current reference value to a value inversely proportional to said first signal;

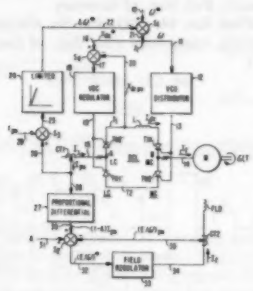
generating a reactive-current reference value shifted 90° relative to the current reference value, the amplitude of said reactive-current reference value being proportional to the ratio of the value $1-n_o$ and the absolute value of the actual speed $|n_{ist}|$; and

adding said reactive-current reference value to said current reference value to form an adjusted current reference value for controlling the converter.

4,460,861
CONTROL SYSTEM FOR MACHINE COMMUTATED INVERTER-SYNCHRONOUS MOTOR DRIVES

John Rosa, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 21, 1983, Ser. No. 544,149
Int. Cl.³ H02P 5/36
U.S. Cl. 318—722 13 Claims



1. In an adjustable speed synchronous motor drive operating with a torque T at an angular velocity ω including:

an AC power supply; and AC/DC static line converter responsive to said power supply for establishing a DC voltage V_{dc}; a DC link for supplying a current I_{dc} under said voltage V_{dc}; an inverter responsive to said DC link for supplying AC current I to said motor; means for controlling said line converter and said inverter under natural commutation, one by said AC power supply, the other by the EMF of said motor;

and means for generating firing pulses onto said inverter at a rate which is proportional to the desired motor angular velocity ω^*; the combination:

first means operative in relation to said angular velocity ω for controlling V_{dc} for establishing a first relationship between I and T;

second means operative in relation to said current I for controlling I_f for establishing a second relationship between E/ω and T, where I_f is the field current of the motor and E is the motor excitation voltage; and

said first and second relationships being such that for each value of the torque T and the angular velocity ω, the commutation margin angle δ of the inverter, which is defined by a characteristic function $\delta = f_2(E,I,\omega,T)$, δ remains above a safe limit for the inverter.

4,460,862
ELECTRONIC SPEED AND SLOWING DOWN CONTROL WITH INTRINSIC SAFETY

Fausto L. Espinosa, Braque #4284, and Ramón R. Alejandre, San Aristeo #2238, both of Guadalajara, Jalisco, Mexico

Filed May 15, 1981, Ser. No. 263,913
Claims priority, application Mexico, May 20, 1980, 182394
Int. Cl.³ H02P 3/22, 3/20
U.S. Cl. 318—741 2 Claims

1. An improved system for controlling the speed of a plural phase induction motor rotating in both forward and backward directions having a rotor assembly including a plurality of rotor windings comprising:

current control means, including a main current path and a control element for controlling current in the main path in response to the application of a signal of a given polarity to the control element;

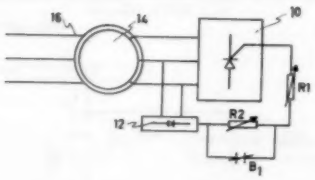
said current control means having a main current path connected across said rotor windings for controlling current flow therein;

circuit means energized by said rotor windings;

a first resistance element connecting said circuit means to said control element;

said circuit means continuously applying a direct current signal having said given polarity to said control element which varies in amplitude in response to changes in rotor winding voltage due to instantaneous motor speed variations;

wherein the improvement comprises:



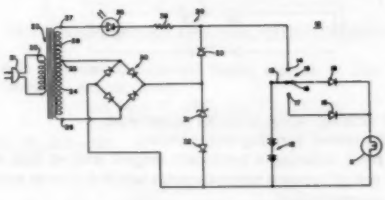
a second resistance element controlling the motor rotor speed when the motor rotates in a backward direction, connected in series with said first resistance element; and

a normally closed switch connected in parallel with said second resistance element and adapted to form an open circuit when the motor rotates in a backward direction to thereby establish said second resistance element in series with said first resistance element.

4,460,863
BATTERY CHARGING FLASHLIGHT CIRCUIT

Frederick J. Conforti, Aurora, Ill., assignor to Pittway Corporation, Aurora, Ill.

Filed Aug. 13, 1982, Ser. No. 407,719
Int. Cl.³ H02J 7/00
U.S. Cl. 320—59 14 Claims

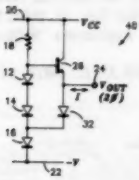


1. A passive two-step battery charging circuit comprising a transformer having a primary adapted to be coupled to an associated source of AC voltage and a tapped secondary, said secondary providing a relatively high output voltage and having a portion for providing a relatively low output voltage, first rectifying means connected to said secondary for rectifying the relatively high output voltage thereof, current limiting means connected to said first rectifying means and adapted to be connected to the associated battery for limiting the current supplied thereto from said first rectifying means, second rectifying means connected in circuit with said secondary portion for rectifying the relatively low output voltage thereof, and passive switch means connected to the output of said second rectifying means and adapted to be coupled to the associated battery and responsive to the battery voltage, said switch means allowing a high current from said second rectifying means to flow to the battery when the battery voltage is below a predetermined voltage and preventing flow of current from said second rectifying means to the battery when the battery voltage is equal to or greater than said predetermined voltage.

4,460,864
VOLTAGE REFERENCE CIRCUIT

Kenneth I. Ray, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 17, 1983, Ser. No. 476,172
Int. Cl.³ G05F 3/20
U.S. Cl. 323—313 **5 Claims**

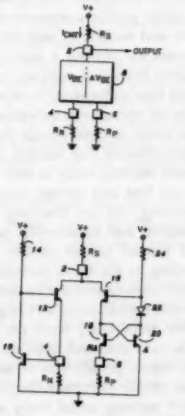


1. A voltage reference circuit for providing a predetermined voltage at an output thereof, comprising:
- first and second power supply conductors;
- diode bias means coupled between said first and second power supply conductors and including a plurality of diode means in series connection therebetween;
- a transistor having first, second and control electrodes, said first electrode being coupled to the output of the voltage reference circuit, said second electrode being coupled to said first power supply conductor, said control electrode being coupled at a first circuit node to said diode bias means; and
- additional diode means coupled between said first electrode of said transistor and a second circuit node to said diode bias means.

4,460,865
VARIABLE TEMPERATURE COEFFICIENT LEVEL SHIFTING CIRCUIT AND METHOD

Byron G. Bynum, Tempe; Randall C. Gray, Scottsdale, and Robert B. Jarrett, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 236,091, Feb. 20, 1981, abandoned. This application Aug. 30, 1982, Ser. No. 412,691
Int. Cl.³ G05F 3/08
U.S. Cl. 323—313 **9 Claims**

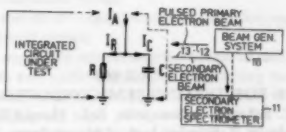


1. A level shifting circuit for producing an output voltage having a desired amplitude and temperature coefficient, comprising:
- a first supply voltage terminal;
- a second supply voltage terminal;
- a first current source coupled to said first supply voltage terminal for generating a first current having a positive temperature coefficient;
- a second current source coupled to said first supply voltage terminal for generating a second current having a negative temperature coefficient; and
- first resistive means coupled between said first and second current sources and said second supply voltage terminal for combining said first and second currents to produce a third current having a net temperature coefficient corresponding to said desired temperature coefficient and for generating from said third current a voltage having said net temperature coefficient, said voltage having said desired amplitude.

4,460,866
METHOD FOR MEASURING RESISTANCES AND CAPACITANCES OF ELECTRONIC COMPONENTS

Hans-Peter Feuerbaum, and Ulrich Knauer, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 284,827
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036734
Int. Cl.³ G01R 27/00
U.S. Cl. 324—57 PS **4 Claims**



1. A method for measuring a resistance and a capacitance of an electronic component, comprising: impressing a current I_A by means of a single pulsed electron beam on the component with the resistance R and the capacitance C wherein $I_A = I_R + I_C$; measuring a potential curve U(t) which arises during the pulse on the electronic component as a result of the impressed current I_A; and determining the resistance R and the capacitance C given the known current I_A by means of an appropriate selection of two measuring points U (t_1) and U (t_2).

4,460,867
METHOD AND CIRCUIT FOR MEASURING OF CURRENT

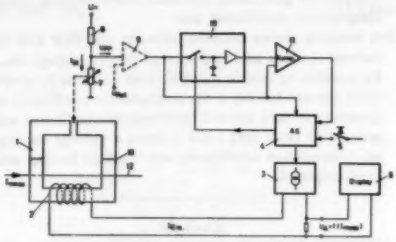
Horst Fleissner, Langenzenn, Fed. Rep. of Germany, assignor to Grundig E. M. V., Fürth, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,490
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040316
Int. Cl.³ G01R 19/00, 17/06
U.S. Cl. 324—117 H **12 Claims**

7. A circuit for measuring direct or alternating current in a contactless manner comprising:
- a magnetic circuit with an air gap;
- a magnetic field dependent element disposed within said air gap and adapted to generate a voltage in response to a magnetic field generated within said magnetic circuit;
- a measuring winding disposed on said magnetic circuit to generate a magnetic field in response to a first current;
- an equivalent current winding disposed on said magnetic circuit to generate a magnetic field in response to a second current;
- storage means for storing the voltage generated by said element in response to said first current;
- comparator means provided to compare the voltage stored

by said storage means to the voltage generated by said element in response to said second current;

power source means for supplying said second current and adapted to change said second current in a predetermined fashion; and



means for measuring said second current;

whereby said second current is equivalent to said first current when said comparator determines that said stored voltage and said voltage generated by said element in response to said second current are equal.

4,460,868

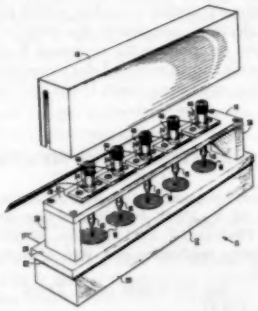
FIXTURE FOR TESTING SEMICONDUCTOR DEVICES

Edward T. Schmitt, Indianapolis, Ind.; Harold R. Ronan, Jr., and Malcolm R. Schuler, both of Mountaintop, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 322,002

Int. Cl.³ G01R *1/06*

U.S. Cl. 324—158 F **7 Claims**



1. Apparatus for testing one of a plurality of semiconductor devices formed on a wafer, said apparatus comprising:

a base having a surface on which semiconductor wafers can be located, said base including heater means for heating said surface and any wafers located thereon;

support stand means associated with said base, said support stand means including a support plate spaced from said surface, a test probe adjustably mounted on said support plate, said test probe extending toward said surface in a direction generally normal thereto and being movable towards and away from said surface whereby the test probe can contact wafers on said surface and nonresiliently clamp them in place.

4,460,869

DETERMINING THE STATE OF THE SURFACE OF A MOVING BODY USING EDDY CURRENTS TO OBTAIN FIRST AND SECOND RUNOUT PROFILES OF THE BODY

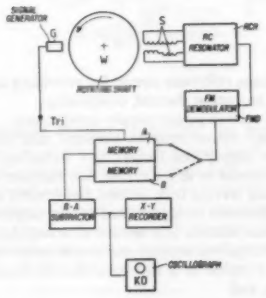
Werner Buser, Basel; Pierre Keller, Baden, and Walter Münch, Zurich, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Continuation of Ser. No. 962,106, Nov. 20, 1978, abandoned. This application Feb. 23, 1982, Ser. No. 351,494

Claims priority, application Switzerland, Dec. 7, 1977, 14957/77

Int. Cl.³ G01R *33/12*; G01N *27/72*; G01K *7/36*

U.S. Cl. 324—200 **7 Claims**



1. An apparatus for monitoring the temperature at a surface of a moving metal body, comprising:

eddy-current coil circuit means, including a signal generator for inducing eddy currents in said metal body and a phasemeter mounted adjacent the metal body, for sensing said eddy currents in portions of said moving body and based thereof obtaining at selected times data signals indicative of surface conductivity of respective of said portions of said moving metal body as said respective portions of said moving metal body move past said phasemeter;

first memory means for storing a first series of said data signals obtained from said eddy-current coil circuit means during moving of said metal body when said metal body is in an initial isothermal state, said first series of data signals defining a first runout profile corresponding to an initial isothermal state at said surface of said metal body;

second memory means for storing a second series of said data signals obtained from said eddy-current coil current means at a selected time subsequent to storing of said first runout profile after an operational movement of said metal body, said second series of data signals defining a second runout profile indicative of the surface conductivity of said portions of said moving body at said selected time;

means coupled to said first and second memory means for synchronously reading out the first and second runout profiles stored therein and subtracting said first runout profile from said second runout profile such that data signals corresponding to the same portions of said metal body are subtracted from each other to obtain an effective or true runout profile indicative of a change in the surface conductivity of the metal body from the time when the first runout profile was obtained until said selected time when said second runout profile was obtained, said effective or true runout profile corresponding to the temperature change of said moving metal body as produced by operational movement thereof;

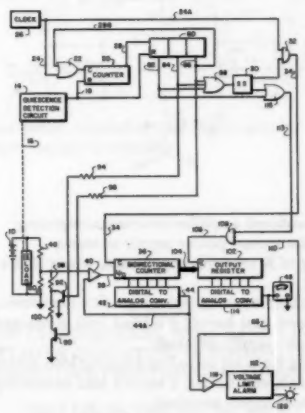
wherein the effects of local inhomogenieties in the composition of said metal body are substantially removed by subtracting said first runout profile from said second runout profile.

4,460,870

QUIESCENT VOLTAGE SAMPLING BATTERY STATE OF CHARGE METER

Eugene P. Finger, Brewster, N.Y., assignor to Curtis Instruments, Inc., Mt. Kisco, N.Y.

Filed Jul. 23, 1981, Ser. No. 286,271
Int. Cl.³ G01N 27/46
U.S. Cl. 324—429 33 Claims



8. A battery state of charge indicator system for monitoring the condition of electrical storage batteries in an electrical power system of the type in which charged batteries are discharged during a discharge cycle to supply a variable load and then recharged in a charge cycle and in which before beginning a new discharge cycle, and in which,

the discharge cycle includes a plurality of quiescent intervals,

said indicator system including means for detecting the quiescent condition when there is substantially no current flow through the batteries,

a timing means connected to said quiescent condition detecting means and operable to begin timing a predetermind interval of at least one tenth of a minute each time the beginning of the quiescent condition is detected,

said quiescent condition detecting means being operable to reset said timer upon the interruption of the quiescent condition,

said quiescent condition detecting means being operable to cause said timing means to continue timing said interval while the quiescent condition continues until the timing of said interval is completed,

a voltage sample and storage means connected to said timing means and arranged to be connected to measure the terminal voltage of at least one of the batteries in the power system being monitored,

said timing means being operable upon the completion of the timing of said interval to actuate said sample and storage means,

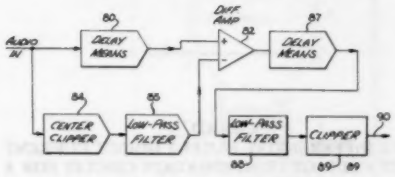
said sample and storage means being operable upon such actuation to take a measurement of the battery terminal voltage to provide an indication of the battery charge condition which is a function of the voltage and a function of the time interval.

4,460,871

MULTIBAND CROSS-COUPLED COMPRESSOR WITH OVERSHOOT PROTECTION CIRCUIT

Robert A. Orban, Belmont, Calif., assignor to Orban Associates, Inc., San Francisco, Calif.

Continuation of Ser. No. 185,238, Sep. 8, 1980, abandoned, which is a division of Ser. No. 64,171, Aug. 6, 1979, Pat. No. 4,249,042. This application Sep. 6, 1983, Ser. No. 529,227
Int. Cl.³ H03K 5/08
U.S. Cl. 328—169 5 Claims



1. In the processing of an audio signal where said signal is band limited and includes amplitude excursions which exceed a predetermined level, a circuit for limiting said audio signal to said predetermined level comprising:

threshold means for providing a first signal representative of and following said excursions of said audio signal beyond said predetermined level;

a first low-pass filter coupled to receive said first signal from said threshold means;

subtracting means for subtracting the output of said low-pass filter from said audio signal, said subtracting means coupled to receive said audio signal and coupled to said first low-pass filter;

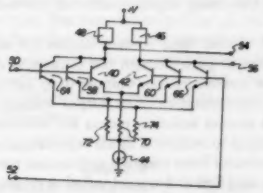
whereby the amplitude of said audio signal is brought to said predetermined level without the introduction of substantial high frequency components.

4,460,872

LOW NOISE DIFFERENTIAL AMPLIFIER

Sven Mattisson, Bjarred, Sweden, assignor to Inventab Audio Kb, Lund, Sweden

Filed Dec. 3, 1981, Ser. No. 327,074
Int. Cl.³ H03F 3/45
U.S. Cl. 330—252 11 Claims



1. A low noise amplifier comprising:

plural differential amplifiers each having first and second inputs adapted to receive a low level analog input signal and at least one output and each comprising first and second amplifier elements connected together in a differential amplifier arrangement, each said element having a control electrode representing a corresponding one of said first and second inputs and first and second primary electrodes between which is defined a controlled current conducting path, said second electrodes of said first and second amplifier elements of each said differential amplifier being connected together, and means for providing a substantially constant current flow between said con-

nected second electrodes of each said differential amplifier and a power supply terminals;

shorting means for shorting together said first inputs of said plural differential amplifier, and for shorting together said second inputs of said plural differential amplifiers; and

means for connecting together said outputs of said plural differential amplifiers;

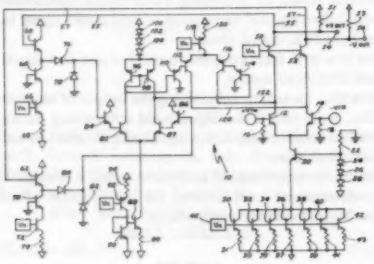
wherein said low noise amplifier has a gain selected to be low enough that said amplifier elements operate in their linear operating region when amplifying said low level analog input signal.

4,460,873

ACTIVE DIFFERENTIAL OUTPUT DIRECT CURRENT OFFSET VOLTAGE COMPENSATION CIRCUIT FOR A DIFFERENTIAL AMPLIFIER

Richard E. Hester, Eden Prairie, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 19, 1982, Ser. No. 442,946
Int. Cl.[3] H03F 3/45
U.S. Cl. 330—259 8 Claims



2. A direct current offset voltage compensation circuit for a differential amplifier comprising:

a differential amplifier haing a pair of inputs for receiving an input source, said differential amplifier having at least first and second transistors, the output at the collectors of said transistors being representative of the output of the circuit,

first and second load resistor means for carrying current which is to pass through the collectors of said first and second transistors, the voltage drop across said resistors being representative of an output voltage signal,

first and second isolation means for receiving a signal and connected to receive a signal representative of the output of the circuit from said first and second transistors, respectively, said first and second isolation means having outputs representative of the input,

first and second peak detector means connected to receive the output from said first and second isolation means for holding a peak signal value,

first and second high gain amplifier means connected to said first and second peak detector means, respectively, for amplifying said peak detector signal,

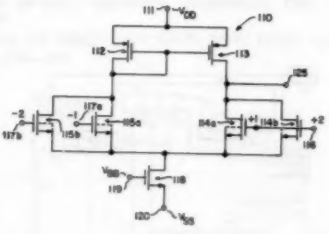
first and second current source amplifier means for receiving output signals from said first and second high gain amplifier means, respectively, said first and second current source amplifier means being connected to the collectors of said first and second transistors so as to reduce curent flowing in said first and second load resistors in order to reduce any direct current offset voltage.

4,460,874

THREE-TERMINAL OPERATIONAL AMPLIFIER/COMPARATOR WITH OFFSET COMPENSATION

Yusuf A. Haque, San Jose, Calif., assignor to American Microsystems, Incorporated, Santa Clara, Calif.

Filed Aug. 14, 1981, Ser. No. 292,968
Int. Cl.[3] H03F 3/45, 1/26
U.S. Cl. 330—261 8 Claims



1. An operational amplifier structure comprising:

a first and a second power supply terminal;

a plurality of K inverting input leads, where K is a positive integer;

a noninverting input leg including a first load device having a first lead, and having a second lead connected to said first power supply terminal;

an inverting input leg including a second load device having a first lead, and having a second lead connected to said first power supply terminal;

J noninverting input leads, where J is a positive integer such that J+K is greater than or equal to three;

a plurality of K inverting input transistors, each having a drain connected to said first lead of said first load device, a source, and a gate connected to a unique one of said K noninverting input leads;

J noninverting input transistors, each having a drain connected to said first lead of said second load device, a source, and a gate connected to a unique one of said J noninverting input leads;

a singular constant current source having a first lead connected to said second power supply terminal and a second lead connected in common to each of said sources of said K noninverting input transistors and to said sources of said J noninverting input transistors; and

an output lead.

4,460,875

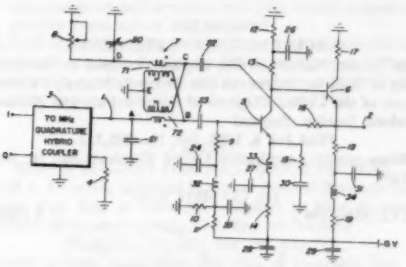
NEGATIVE FEEDBACK AMPLIFIERS INCLUDING DIRECTIONAL COUPLERS

Stephen G. Harman, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 21, 1982, Ser. No. 390,521
Int. Cl.[3] H03F 3/60
U.S. Cl. 330—286 18 Claims

1. An amplifier comprising an amplifier circuit and a negative feedback path for said amplifier circuit, the negative feedback path including a directional coupler having a first port coupled to an input of the amplifier, a second port coupled to

an input of the amplifier circuit, a third port coupled to an output of the amplifier circuit, and a fourth port, and complex



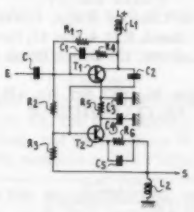
impedance means coupled to said fourth port for controlling input return loss of the amplifier.

4,460,876

LOW CONSUMPTION, WIDE-BAND LINEAR AMPLIFIER OPERATING IN SLIDING CLASS A

Michel Najman, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 24, 1982, Ser. No. 352,067
Claims priority, application France, Feb. 27, 1981, 81 03988
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—296 **2 Claims**



1. A linear amplifier, with low consumption and a wide pass-band, comprising:

first and second power terminals for supplying DC power to said amplifier;

an output terminal

an input transistor and an output transistor each transistor comprising a base, an emitter, a collector, a base-emitter diode and a collector-emitter junction; these two transistors having their respective collector-emitter junctions connected in series between said first and second terminals;

a bridge for biasing the base of the output transistor, connected to the output of the amplifier and to the first terminal; and

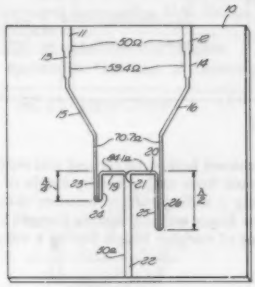
a "parallel resistor-capacitor" cell, coupled between the output transistor and the output of the amplifier, for functioning with the base-emitter diode of the output transistor to provide a detection circuit the bridge and "parallel resistor-capacitor" cell providing a re-injection of a part of a signal output of said amplifier and causing a sliding class A operation.

4,460,877

BROAD-BAND PRINTED-CIRCUIT BALUN EMPLOYING COUPLED-STRIP ALL PASS FILTERS

William G. Sterns, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,419
Int. Cl.³ H01P *5/10*
U.S. Cl. 333—26 **3 Claims**



1. A TEM mode microwave balun constructed in a medium selected from media including stripline, microstrip and airstrip, comprising:

a dielectric substrate;

a pattern of conductive traces along the surface of said substrate, said pattern including a trace corresponding to an unbalanced transmission line, a pair of branches extending in generally opposite directions along said surface of said substrate from the trace of said unbalanced line;

a first close-coupled-strip-transmission line filter comprising a first pair of close-coupled, generally parallel, conductive traces connected together at a first end thereof and being open at a second end, said first filter having a 360° insertion phase;

a second close-coupled-strip-transmission line filter comprising a second pair of close-coupled, generally parallel, conductive traces connected together at a first end thereof and being open at a second end, said second filter having a 180° insertion phase;

a spaced pair of generally parallel conductive traces along the surface of said substrate constituting a balanced transmission line, one trace of said spaced pair being connected to a trace of said first coupled-strip filter at said open end thereof and the other trace of said spaced pair being connected to a trace of said second coupled-strip filter at said open end thereof, each of the remaining traces of said coupled-strip filters being connected to a corresponding one of said branches.

4,460,878

TUNABLE RESONATOR AND AN ULTRAHIGH-FREQUENCY CIRCUIT COMPRISING AT LEAST ONE SUCH RESONATOR

Jean Fouillet, and Jean C. Cruchon, both of Paris, France, assignors to Thomson-CSF, Paris, France

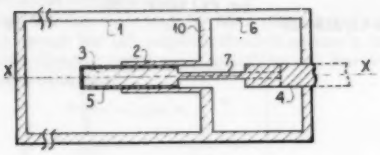
Filed Jul. 27, 1981, Ser. No. 286,973
Claims priority, application France, Jul. 29, 1980, 80 16709
Int. Cl.³ H01P *1/201, 7/04*
U.S. Cl. 333—207 **5 Claims**

1. A tunable coaxial resonator comprising:

a metal cavity forming an external conductor and having a re-entrant hollow metal finger fixed with respect to a wall of the cavity to which it is secured, said cavity having a longitudinal axis,

an internal conductor in the form of a plunger having the same axis and movable inside a wall of the cavity and the

re-entrant hollow finger for extending the length of said re-entrant hollow finger inside said cavity according to a translation movement, the end of the plunger inside said finger having a diameter slightly less than the internal diameter of the finger,



said re-entrant hollow finger and said mobile plunger being separated from each other by means of a dielectric layer forming a sliding surface between them, said re-entrant hollow finger and said mobile plunger forming an electrical line of variable length having a very low impedance.

4,460,879

VARIABLE TUNING DEVICE

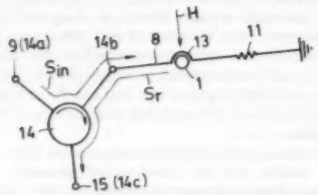
Masaaki Hirose, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushiki Kaisha, Tokyo, Japan

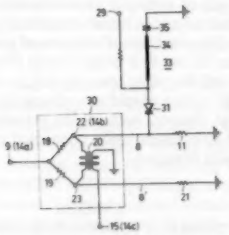
Filed Dec. 4, 1981, Ser. No. 327,473

Claims priority, application Japan, Dec. 12, 1980, 55-175494; Dec. 17, 1980, 55-178207

Int. Cl.³ H03H *7/01*; H01P *1/20, 1/217*

U.S. Cl. 333—174 **12 Claims**





1. A variable tuning device for selecting a signal of a desired frequency component from an input signal, comprising:

a non-reversible circuit including a three-port circulator, having first, second and third ports respectively arranged in the direction of circulation of said circulator, wherein said input signal is applied at said first port, a signal corresponding to said input signal is provided from said first port to said second port;

a resistive terminating element connected via a signal path to the second port; and

a magnetic resonance element coupled with said signal path and having a variable resonance frequency,

wherein the third port is supplied from the second port with said signal of a desired frequency component in correspondence to the resonance frequency of the resonance element.

4,460,880

CIRCUIT MATCHING ELEMENTS

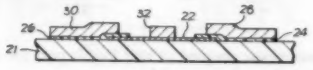
Brian Turner, Malvern Wells, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 6, 1982, Ser. No. 395,312

Claims priority, application United Kingdom, Jul. 10, 1981, 8121409

Int. Cl.³ H01P *3/08*

U.S. Cl. 333—238 **9 Claims**



1. A slow wave transmission line for transmitting electronic signals comprising:

a semi-insulating support substrate,

line conducting elements overying at least one surface of said support substrate to define a signal propagation path, and thin metallic film disposed in said signal propagation path,

wherein said thin metallic film has a thickness which is less than the skin depth of said signals within said thin metallic film and is sufficiently thin to increase the specific capacitance of said transmission line without decreasing the specific inductance at the operating frequency of the line.

4,460,881

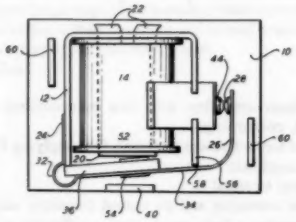
QUIET RELAY

Jack B. Meister, 68 Chimney Ridge, Convent Station, N.J. 07961; Stephen P. Beard, R.D. 4, Box 43, Newton, N.J. 07860, and Robert H. Andrews, 131 Bound Brook Rd., Parsippany, N.J. 07054

Filed Sep. 30, 1982, Ser. No. 429,141

Int. Cl.³ H01H *51/08*

U.S. Cl. 335—128 **3 Claims**



1. An electro-mechanical relay characterized by quiet operation comprising:

a coil containing a pole piece for creating a magnetic field in response to a flow of electrical current through said coil;

an armature of magnetic material extending transversely with respect to the axis of said coil across said pole piece;

a spring arm secured to said armature having a fixed end and a free end which is movable with respect to said fixed end in response to movements of said armature toward or away from said pole piece;

said free end of said spring arm being bent at a generally right angle to the relay armature adjacent its free end so that the free end has an end section extending in the direc-

tion of the coil axis which moves in a plane generally parallel to the axis of the coil when the coil is energized and attracts the armature, said free end having an electrical contact element thereon which is moved in response to movements of said armature in a path which is generally parallel to the axis of said coil, and

a fixed electrical contact element positioned adjacent said movable contact element for sliding engagement with said movable contact along mating surfaces which lie in a plane generally parallel to the axis of said coil.

4,460,882

BRAKE MAGNET FOR WATT-HOUR METERS

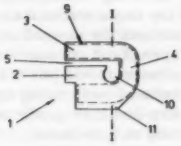
Alfred A. Heinrich, and Karl E. Oerter, both of Bergisch-Gladbach, Fed. Rep. of Germany, assignors to Max Baermann GmbH, Bergisch-Gladbach, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,772

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151429

Int. Cl.³ H01F *7/08*

U.S. Cl. 335—225 **6 Claims**



1. A brake magnet for watt-hour meters comprised of a molded one piece U-shaped body having a pair of spaced parallel legs and an integral base member, said legs having opposed facing surfaces defining an air gap into which a meter braking disc is adapted to extend, said body being formed of a molded thermosetting resin having permanent magnetic powder particles embedded only in each of said legs adjacent said facing surfaces.

4,460,883

STABILIZATION BALLAST FOR OPERATING A GAS AND/OR VAPOR DISCHARGE LAMP

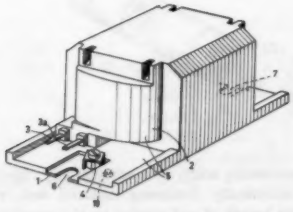
Jan L. Van Der Hoek, and Bartholomeus W. M. Blom, both of Oss, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,487

Claims priority, application Netherlands, Mar. 25, 1981, 8101468

Int. Cl.³ H01F *15/02, 27/06*

U.S. Cl. 336—65 **5 Claims**



1. A stabilization ballast for operating a discharge lamp comprising, an electric coil supported by a metal connecting plate, the connecting plate being coated with a layer of an electrically insulating plastic material at least on that side of the connecting plate contiguous to the coil, the connecting plate being provided with one or more holes the cross-section of which is largest at the side of the plate remote from the coil, and wherein the holes are filled with a plastic material of the same composition as that of the layer so that said plastic filling forms one integral unit with the plastic layer.

4,460,884

TRANSFORMER COMPRISING A MAGNETIC SCREEN

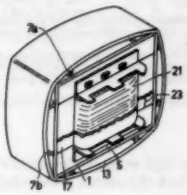
Sieghard Post, Guntersdorf, and Siegfried Mehl, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 25, 1982, Ser. No. 392,046

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1981, 3126498

Int. Cl.³ H01F *27/28*

U.S. Cl. 336—73 **13 Claims**



1. A transformer comprising a lamination core of band iron, and a magnetic screen comprising a wound band arranged around the lamination core with a space therebetween and secured to the core by means of expansion wedges provided in the space between the lamination core and the magnetic screen, wherein said expansion wedges extend transversely of or at an angle with respect to the winding direction of the wound band.

4,460,885

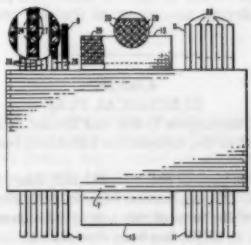
POWER TRANSFORMER

Irvin L. Hansen, Muncie; Leach S. McCormick, Yorktown, and Harold R. Moore, Mount Pleasant Twp., Delaware County, all of Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 29, 1981, Ser. No. 287,844

Int. Cl.³ H01F *27/28*

U.S. Cl. 336—180 **2 Claims**



1. A power transformer comrprising:

a laminated magnetic core;

low voltage coil groups having a pancake-type winding structure disposed in inductive relationship with said core;

a high voltage coil group having a winding structure disposed in inductive relationship with said core and between each pair of low voltage groups;

each low voltage coil group including a plurality of said pancake winding structures; and

said high voltage coil group including a plurality of coil

layers that are successively formed one upon another by winding a strand of an insulated conductor back and forth between the low voltage coil groups.

4,460,886

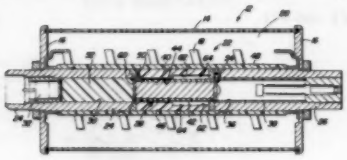
PRESSURE-OPERATED SWITCH FOR A CURRENT-LIMITING, HIGH-VOLTAGE INTERRUPTING MODULE

John M. Jarosz, Skokie, and William R. Panas, Glenview, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Nov. 1, 1982, Ser. No. 437,926

Int. Cl.³ H01H *71/20*

U.S. Cl. 337—148 **10 Claims**



1. An improved high-voltage electrical switch for opening a current path in which the switch is included, the switch having a pair of normally interconnected contacts which are relatively movable apart along a fixed line of direction to form a first gap therebetween and to open the current path; an insulative trailer carried by one of the contacts defining an enclosed chamber with the other contact when the contacts are interconnected, the trailer being intimately and conformally received in and movable through the chamber; means for pressurizing the chamber and applying high force to the trailer to rapidly drive the contacts apart, and an insulative liner through a bore of which the one contact and the trailer intimately and conformally move as the contacts move apart, the intimate, conformal movement physically isolating the one contact from the chamber and the other contact and insulating the first gap; wherein the improvement comprises:

the trailer and the liner comprising abrasion-resistant, high surface lubricity, non-brittle, ultra high molecular weight polyethylene, so that neither the trailer nor the wall of the bore are abraded by the intimate and conformal movement and so that there occurs free movement of the one contact through the bore and free movement of the trailer through the chamber and the bore, whereby free movement of the one contact and the trailer is not compromised, and further so that the trailer and the liner remain integral during movement of the one contact and the trailer.

4,460,887

ELECTRICAL FUSE

Jon McAlear, Barrington Trails, and Robert J. Tait, Arlington Heights, both of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 245,265, Mar. 19, 1981, Pat. No. 4,385,281. This application May 9, 1983, Ser. No. 492,603

The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.

Int. Cl.³ H01H *85/02*

U.S. Cl. 337—186 **5 Claims**

1. An improved electrical fuse comprising: an oppositely open ended insulating housing in the form of a cylindrical sleeve;

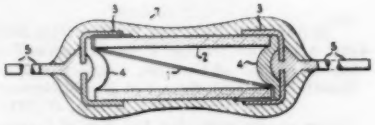
a fuse element disposed within said housing;

a pair of end cap means closing the ends of said sleeve and electrically and physically connected to the ends of said fuse element, each of said end cap means being cup-shaped to provide a cylindrical recess to accommodate an end of said sleeve;

an external lead connected to each of said end cap means and extending outwardly therefrom for making external electrical connection to said fuse element;

a quantity of solder in each of said end cap means fused to make electrical contact between said end cap means and said ends of said fuse element;

said fuse element extending diagonally across the length of said sleeve housing and having a portion of each of its ends exiting the open ends of said sleeve and folded back over a portion of the external surface of said sleeve to be



located between the sleeve ends and the end cap means; and

an adherent insulating coating layer disposed over said sleeve end cap means and leads to cover, seal, and physically interconnect the exposed exterior surfaces of said sleeve, said pair of end cap means and a portion of each of said leads adjacent to said pair of end cap means;

and the thickness of said coating layer being adjusted to provide a step-free outer profile over the length of said sleeve and said end cap means.

4,460,888

FUSE

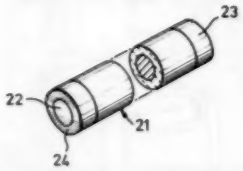
Arthur D. Gratton; Terence V. McGhie, both of Cockermouth; Robert C. Whelan, Comberton, all of England, and Josephus B. Peeters, Veltem-Beisem, Belgium, assignors to Dorman Smith Fuses Limited, Cumbria, England

Filed Sep. 29, 1982, Ser. No. 428,259

Claims priority, application United Kingdom, Nov. 27, 1981, 8135916

Int. Cl.³ H01H *85/04*

U.S. Cl. 337—290 **12 Claims**

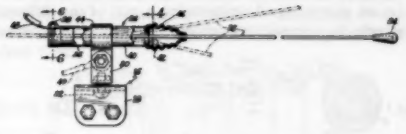


1. A fuse consisting solely of a substantially rigid elongate member of electrically insulating material and, extending throughout the length of and carried by the member, at least one longitudinally continuous layer of electrically conductive material, the longitudinally extending layer at each of its ends being of such a cross-sectional area as to constitute an effective terminal of the fuse and, at at least one position intermediate its terminals, being of such a cross-sectional area that it will change state to interrupt a circuit at a predetermined fault condition.

4,460,889
PROXIMITY ALARM

William J. Elks, 1310 Cary Way, San Diego, Calif. 92109

Continuation-in-part of Ser. No. 254,825, Apr. 16, 1981, Pat. No. 4,390,862. This application Jul. 26, 1982, Ser. No. 401,663
Int. Cl.³ B60Q 1/00
U.S. Cl. 340—61 3 Claims

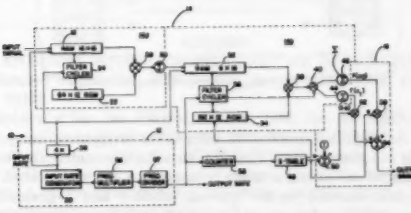


1. A proximity sensing and signaling device comprising:
(a) an electrical circuit having an electrical signal device and a two-contact proximity switch therein such that where the latter is actuated, said signal device signals;
(b) support structure for mounting said switch to a vehicle and defining a probe mount;
(c) said proximity switch comprising:
(i) an elongated metallic probe defining the first contact of such switch and having a foreign-object contacting, outboard end and an inboard end and being engaged in frictional sliding relation by said probe mount;
(ii) a second contact spaced from said probe and outboard of said probe mount, and at least partially encircling said probe;
(d) said probe mount frictionally engaging said probe and otherwise being clear of obstructions to axial motion in either direction of said probe such that said probe is axially adjustable and frictionally engageable, at adjusted positions at virtually the entire length of the probe;
(e) said probe mount comprising a plug having said probe passing therethrough, said plug having a bore passing substantially tangentially of said probe and having a set screw therein, whereby the threads of said screw pass parallelly along said probe to engage same;
(f) said plug being an insulator, and said screw defines part of said circuit and conducting current to said probe in addition to establishing frictional contact therein.

4,460,890
DIRECT DIGITAL TO DIGITAL SAMPLING RATE CONVERSION, METHOD AND APPARATUS

Bruce Busby, Mountain View, Calif., assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 21, 1982, Ser. No. 341,349
Int. Cl.³ H03K 13/24
U.S. Cl. 340—347 DD 13 Claims



1. A method for directly converting an input digital signal at a first sampling rate to an output digital signal at a second sampling rate, said method comprising the steps of
generating a timing signal at the first rate, at the second rate, and at an increased rate, said increased rate being an integral multiple of the first rate;
clocking the input signal into a first storage means at the first rate;
multiplying a value of the input signal in a select storage location in said first storage means with a predetermined value in a select storage location in a second storage means to produce a multiplication result; and summing a plurality of the multiplication results to produce an increase signal in accordance with:

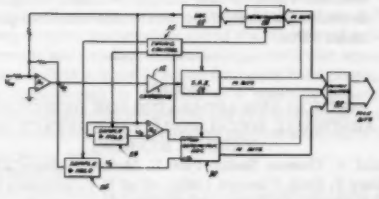
$$\text{increased signal} = \sum_{I=0}^{N} \text{RAM}(I) * \text{ROM}(K * I + \text{Offset})$$

where:
RAM(I) is the value of the first storage means in the Ith storage location;
ROM(K * I+Offset) is the value of the second storage means in the K * I+Offset storage location;
K is said integral multiple;
Offset is a number from 0 to K−−1;
N is the discrete number of storage locations; and
interpolating the increased signal to produce the output signal.

4,460,891
ANALOG-TO-DIGITAL CONVERTER WITH EXPLICIT INTERPOLATION

Norman B. Bernstein, Sharon, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Jun. 3, 1982, Ser. No. 384,543
Int. Cl.³ H03K 13/02
U.S. Cl. 340—347 AD 22 Claims



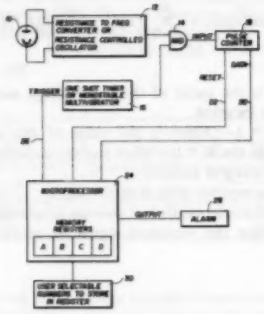
18. The method of converting an analog input signal to a corresponding digital output signal comprising the steps of:
applying said analog input signal to an a-to-d converter including a controlled DAC to produce at the DAC input an M-bit digital signal representing a set of higher-order bits of the final digital output signal and to produce a corresponding first analog output signal at the DAC output;
developing a residue signal representing the difference between said analog input signal and said first analog signal;
incrementing said DAC to produce a second analog output signal corresponding to the next higher output step of the DAC;
developing an N-bit signal representing the proportion which said residue signal bears to the difference between said first and second DAC analog output signals; and
combining said M-bit and N-bit signals to produce the final M+N bit digital output signal.

4,460,892

METHOD AND APPARATUS FOR DETECTING CHANGES IN LIGHTING INTENSITY UTILIZING A MICROPROCESSOR

Cornelius E. Bailey, Jr., 1816 30th St. SE., Washington, D.C. 20020

Filed Oct. 23, 1981, Ser. No. 314,332
Int. Cl.³ G08B 13/18
U.S. Cl. 340—555 9 Claims



1. A method of monitoring an area to detect sudden changes in the ambient light level thereof, which comprises the steps of:

measuring the ambient light level of the area for successive equal time periods;

subtracting the ambient light level measurement of each time period from the ambient light level measurement of the preceeding time period, or visa versa, to obtain as a difference value an absolute value of the difference between the two ambient light level measurements, whenever the preceeding ambient light level measurement is equal to a value other than zero;

comparing the difference value with a predetermined value; and

indicating whenever the difference value exceeds the predetermined value, to thus indicate a sudden change in the ambient light level of the area which exceeds a predetermined value.

4,460,893

METHOD AND APPARATUS FOR DETECTING ABNORMAL METAL-TO-METAL CONTACT IN A JOURNAL BEARING

Daniel A. Thomas, Scotia; Paul E. Malone, Schenectady, and Gary F. Goth, Pleasant Valley, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,934
Int. Cl.³ G08B 21/00
U.S. Cl. 340—682 12 Claims

1. In combination with a flow-lubricated bearing carrying a rotating shaft, apparatus for detecting abnormal metal-to-metal contact between the bearing and shaft leading to rapidly occurring excessive bearing temperature, comprising:

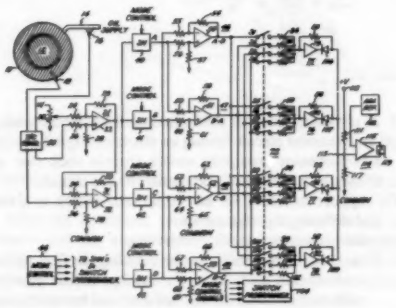
first temperature sensing means disposed on said bearing for providing a signal indicative of bearing temperature;

a plurality of sample-hold means for providing a plurality of signals representing bearing temperature values attained during consecutive sampling time periods, each sample-hold means periodically sampling said temperature signal during a sampling time period and holding the sampled value during a succeeding hold time period;

a plurality of subtracter means for providing a plurality of difference signals, each subtracter means receiving two consecutive ones of said plurality of bearing temperature values and producing a difference signal indicative of the difference between said two consecutive bearing temperature signals;

a plurality of summing means providing a plurality of summed difference signals, each summing means being operative to sum selected ones of said difference signals;

signal selector means for periodically selecting sets of said plurality of difference signals to be summed in said plurality of said summing means, each summing means providing an output signal representing a sum of the difference signals for a preselected number of sampling time periods,



said signal selector means and said plurality of sample-hold means having the same periodicity;

a high-value selector for receiving said plurality of summed difference signals and for selecting the highest valued one of said signals; and

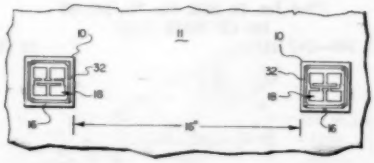
means for comparing said highest valued signal with a predetermined value, a value of said highest valued signal in excess of said predetermined value being indicative that bearing temperature is increasing at an excessive rate characterizing abnormal metal-to-metal contact.

4,460,894

LATERALLY ISOLATED MICROSTRIP ANTENNA

Seymour Robin, Woodland Hills, and Yosef Klein, Northridge, both of Calif., assignors to Sensor Systems, Inc., Chatsworth, Calif.

Continuation-in-part of Ser. No. 407,108, Aug. 11, 1982. This application Mar. 21, 1983, Ser. No. 477,214
Int. Cl.³ H01Q 1/38, 1/52
U.S. Cl. 343—700 MS 21 Claims



1. An improved microstrip antenna for being mounted generally in a plane in which another antenna is mounted, the first mentioned microstrip antenna comprising a ground member, a dielectric element on the ground member and a generally planar radiating element on the dielectric element for radiating a signal at a radiating frequency, grounding ring means of conductive material spaced from and extending at least partially around the radiating element, and means electrically connecting the ring means to the ground member for limiting lateral radiation from the radiating element in the plane of the radiating element, the improvement comprising the provision of:

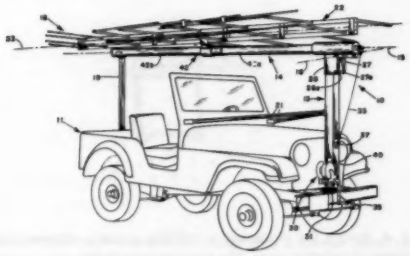
the space between the radiating element and the grounding ring means being less in a first direction toward the other antenna than the space between the radiating element and the grounding ring means in a direction at a right angle the first direction.

4,460,895

INTEGRATED ERECTABLE ANTENNA SYSTEM

Joseph E. Bert, Fremont, and Robert W. Cotterman, Sunnyvale, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 10, 1982, Ser. No. 387,575
Int. Cl.³ H01Q *1/08, 1/32*
U.S. Cl. 343—713 **19 Claims**



1. An integrated erectable antenna system comprising a platform,

a post secured to and extending vertically from said platform and having an upper end spaced a predetermined distance from said platform,

a mast having first and second ends and being pivotally secured adjacent to the first end to said upper end of said post for movement between a horizontal stowed position and a vertical operative position,

means for pivoting said mast between said horizontal and vertical positions,

an antenna assembly slidably mounted on said mast between a stowed position substantially midway between said first and second ends thereof and an operative position at said second end,

means to releasably lock said assembly in said stowed and operative positions, respectively,

said assembly comprising an elongated boom and a hinge mechanism, said boom having a longitudinal axis and being pivotally connected to said hinge mechanism for rotation about first and second axes extending perpendicular and parallel, respectively, to said longitudinal axis of the boom,

radiating means mounted on said boom, and

means for electrically feeding said radiating means.

4,460,896

ANTENNA WITH TUNABLE HELICAL RESONATOR

Clarence F. Shmitka, 8554 Lurline Ave., Canoga Park, Calif. 91306

Division of Ser. No. 160,086, Jun. 16, 1980, Pat. No. 4,349,825. This application May 17, 1982, Ser. No. 379,074
Int. Cl.³ H01Q *9/00, 1/40*
U.S. Cl. 343—750 **4 Claims**

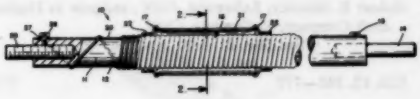
1. A mechanical coupling assembly permitting sliding frictional engagement comprising:

a. elongated core means;

b. an insulated wire wound over said core means;

c. a sleeve encircling said core means and wire and slideable thereover; and

d. A flexible cylindrical sheath disposed over said sleeve, said sheath extending over the ends of said sleeve to provide frictional contact between said core means and wire and sleeve while permitting said sleeve to slide over said core means and wire;



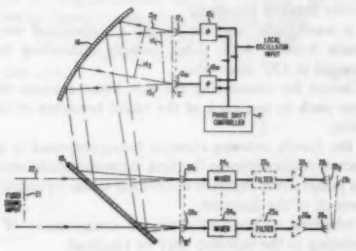
e. whereby the portions of said sheath extending over the ends of said sleeve releasably interlock with the core means and wire.

4,460,897

SCANNING PHASED ARRAY ANTENNA SYSTEM

Michael J. Gans, Monmouth Beach, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 250,271, Apr. 2, 1981, abandoned. This application Jul. 26, 1982, Ser. No. 402,101
Int. Cl.³ H01Q *3/34, 3/36, 3/42*
U.S. Cl. 343—754 **9 Claims**



1. A phased array antenna system comprising:

a focusing means (**16**) comprising a predetermined aperture;

a plurality of m feed elements (12_1–12_m) disposed to form a first planar array directed at the focusing means; and

a plurality of m phase shifters (10_1–10_m), each phase shifter being coupled to a separate one of the plurality of m feed elements and capable of introducing a particular separate phase shift to a signal in a first frequency band propagating therethrough in response to a remotely generated control signal to permit a particular first directional planar wavefront (**14**) to be launched by the feed elements of the first planar array

characterized in that

the first frequency band signal is a local oscillator signal and the antenna system further comprises:

diplexing means (**18**) disposed in the aperture of the focusing means and capable of directing both the first planar wavefront comprising the local oscillator signal and a second planar wavefront (**21** or **30**) comprising a message signal in a second frequency band propagating in a second direction at an image plane (Σ') of the first planar array;

a plurality of n feed elements (20_1–20_n) forming a second planar array disposed on said image plane of the first planar array and directed at the diplexing means for intercepting the first and second planar wavefronts, where m and n can be a same or different integer; and.

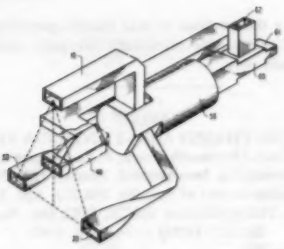
a plurality of n mixing means (24_1–24_n), each mixing means comprising an input coupled to a separate feed element of the second planar array for mixing the local oscillator signal at a first frequency and the message signal at a second frequency to generate an output signal comprising the message signal at a third frequency for transmission from the antenna system.

4,460,898

FOUR ELEMENT ANTENNA TURNSTILE TRACKING SYSTEM

Robert E. Silinsky, Lakewood, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 21, 1981, Ser. No. 332,984
Int. Cl.³ H01Q 25/04
U.S. Cl. 343—777 9 Claims



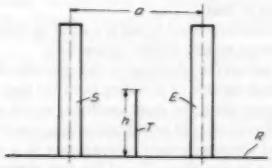
1. An antenna system comprising:
(a) four antenna elements;
(b) a waveguide junction having a cylindrical waveguide main branch with three radially extending branches spaced at 120° intervals;
(c) means for connecting the first three antenna elements, one each to one each of the radial branches of the junction;
(d) the fourth antenna element being disposed in a preselected relationship to the first three elements; and
(e) a polarization resolver connected to the cylindrical main branch of the junction,
(f) whereby orthogonally related components of signals residing in the junction may be resolved.

4,460,899

SHIELD FOR IMPROVING THE DECOUPLING OF ANTENNAS

Peter Schmidt, Stuttgart, and Siegfried Kulka, Waldenbuch, both of Fed. Rep. of Germany, assignors to Metalltechnik Schmidt GmbH & Co., Fed. Rep. of Germany

Filed Jan. 22, 1982, Ser. No. 341,857
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1981, 3102323
Int. Cl.³ H01Q 1/52
U.S. Cl. 343—841 6 Claims



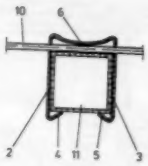
1. An array of one or more pairs of helical transmitting and/or receiving antennas in which the antennas of each pair have oppositely directed circular polarization and are disposed perpendicular to an electrically conductive flat reflector wall, characterized by an electrically conductive partition wall (T) which is positioned midway between the two antennas of one of said pairs of antennas, and particularly between a transmitting and a receiving antenna (S,E), said partition wall being also perpendicular to said reflector wall (R) and electrically conductively connected thereto and having a height measured perpendicular to said reflector wall corresponding to substantially one half the wavelength (λ) of the design frequency of said array.

4,460,900

DEVICE FOR MOUNTING AN ANTENNA ELEMENT ON AN ANTENNA SUPPORTING SPAR

Helmut Conrad, Hamburg, Fed. Rep. of Germany, and Reinhard Schmidt, Heidacker 52, 2000 Hamburg 54, Fed. Rep. of Germany, assignors to Reinhard Schmidt, Hamburg, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 302,071
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035818
Int. Cl.³ H01Q 1/12
U.S. Cl. 343—880 11 Claims



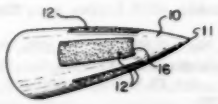
1. A device for mounting a rod-like antenna element on an antenna supporting spar, the device comprising:
a generally U-shaped clamp comprising a base and two depending legs;
said legs at their free ends, are provided with means for clampingly pressing against or into said supporting spar;
said legs, adjacent to said base, are provided with means defining an aperture receivably engageable of a rod-like antenna element in substantially parallel relationship to said base; and
said base provided with means for preventing movement of said antenna element through said means defining an aperture, when said legs are not pressed towards one another and allowing movement of said antenna element through said means defining an aperture, when said legs are pressed towards one another for a predetermined distance.

4,460,901

INTEGRATED ANTENNA-RADOME STRUCTURE THAT FUNCTIONS AS A SELF-REFERENCING INTERFEROMETER

Gus P. Tricoles, San Diego, and Eugene L. Rope, El Cajon, both of Calif., assignors to General Dynamics Corporation, Electronics Division, San Diego, Calif.

Filed Nov. 27, 1981, Ser. No. 325,343
Int. Cl.³ H01Q 1/40, 1/42, 13/28
U.S. Cl. 343—872 13 Claims



1. An antenna-radome structure, comprising
a radome having a leading edge and including at least one segment of dielectric material having a front edge at or adjacent the leading edge of the radome;
a corresponding number of antennas disposed normal to the longitudinal axis of the radome and respectively embedded in or placed on the surface of each corresponding dielectric segment, wherein each antenna is located at a

distance from the front end of the corresponding dielectric segment corresponding to a maximum of intensity in an intensity fringe pattern produced by interference between free space waves of a predetermined frequency incident upon the dielectric segment and waves guided by the dielectric segment in response to said indicent waves.

4,460,902

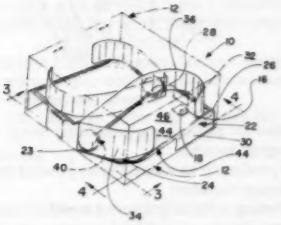
VEHICLE DRIVE RECORDER

Jesse W. Beckman, 7706 Forest Ave., Munster, Ind. 46321

Filed Feb. 1, 1983, Ser. No. 462,893

Int. Cl.³ G01D *9/32*

U.S. Cl. 346—7 **16 Claims**



15. A vehicle drive recorder comprising a tamper proof box having a pair of compartments therein, each of said compartments having an inclined surface bottom, and low points on said two inclined bottom surfaces, said inclined bottom surfaces lying in a plane extending upwardly from said low points to the opposite ends of said compartments, said compartments being adjacent each other with said two low points being at the middle of the sides of said box, said two compartments being identical but rotated 180 degrees from each other, said guide walls vertically extending upwardly and outwardly at right angles from said low points, said guide walls terminating in curved portions away from said low points, a heavy ball in each of said compartments being biased by gravity toward said low point on each of said inclined bottom surfaces, said heavy balls being of two inches or larger in diameter and made of a material of a specific density approximately equal to or greater than six, a lid and a seal for closing said box, said lid and said box having means for receiving said seal, said seal engaging said lid and said box to seal the same and also being adapted to engage an opening in the vehicle to mount said recorder in said vehicle, and recording means in each of said compartments juxposed between said inclined bottom surfaces and said heavy balls, said recording means including pressure sensitive means which will leave a mark when said ball rolls across, said box being adapted to be mounted in a vehicle, whereby movement of said heavy balls due to acceleration, braking and cornering forces on the vehicles are measured and recorded by movement of said heavy balls up the inclined bottom surfaces and across said recording means.

4,460,903

INK JET CATCHER

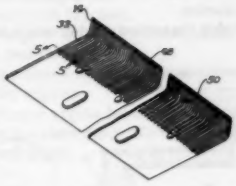
Kenneth L. Guenther, Park Ridge; Edward H. Zemke, Chicago, both of Ill., and Gerald D. Warden, Easton, Pa., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jul. 19, 1982, Ser. No. 399,388

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 **1 Claim**

1. In an ink jet printing device wherein printing occurs through a stream of ink made from individual drops with generally L-shaped gutter means for selectively intercepting drops from the stream, one leg of the L-shaped gutter means having an edge adjacent to the stream, the improvement comprising a series of adjacent parallel capillary paths extending downwardly in the direction of flow of the stream, the capillary paths carrying away droplets of ink as they form on the edge of the gutter means as the stream passes back and forth across the edge, a porous block positioned on the leg opposite



the leg adjacent the stream, the porous block absorbing and providing a storage means for ink caught and removed, and wherein the capillary paths extend from the edge of the L-shaped gutter means to the porous block.

4,460,904

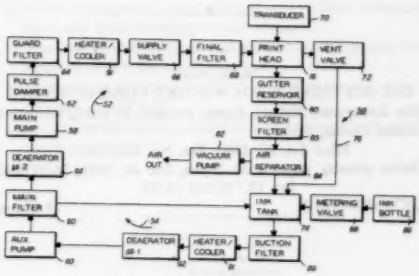
INK JET INK HANDLING SYSTEM

Michael J. Oszczakiewicz, Penfield; Walter F. Leising, and Matthew P. Wojciechowski, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 5, 1982, Ser. No. 439,526

Int. Cl.³ G01D *15/18*

U.S. Cl. 364—75 **6 Claims**



1. In an ink jet marking system, an ink handling subsystem comprising:

an ink drop generator having an ink cavity in communication with one or more nozzles and means for delivering ink to said cavity so that one or more ink columns squirt through said one or more nozzles toward a printing medium, said means for delivering including means for controlling the pressure of ink delivered to said drop generator, and an ink processing loop coupleable to the generator for circulating ink at a pressure lower than the pressure of the ink delivered to said drop generator and having one or more ink processing stations wherein the condition of ink delivered to the drop generator is monitored and maintained.

4,460,905

CONTROL VALVE FOR INK JET NOZZLES

Jacob E. Thomas, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Mar. 29, 1982, Ser. No. 363,360

Int. Cl.³ G01D *15/18*

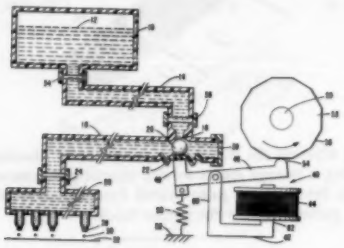
U.S. Cl. 346—140 R **18 Claims**

1. A control system for an ink jet printer having a pressurized supply of ink for delivery to a plurality of aligned ink jet nozzles, comprising

first conduit means connected with said ink supply for carrying ink therefrom,

second conduit means having a resilient portion and directly connected with said first conduit means for carrying ink to said ink jet nozzles,

valve means within the second conduit means and positioned



at the confluence of said first and second conduit means for controlling the flow of ink therethrough, and

means operably associated with the resilient portion for controlling said valve means for enabling droplets of ink to be ejected from said nozzles in response to operation of said valve means and printing on record media in dot matrix manner.

4,460,906

INK JET HEAD WITH WELDED COMPONENTS

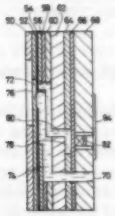
Yoshio Kanayama, Nabari, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 22, 1982, Ser. No. 400,929

Claims priority, application Japan, Jul. 24, 1981, 56-117000

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **3 Claims**



1. An ink jet system ink on demand a print head which comprises a pressure chamber of which one end is provided with an orifice means for emitting ink droplets therethrough, and the other end is connected to an electro-mechanical transducer for suddenly reducing the volume of said pressure chamber, said print head comprising:

a base plate;

an oscillation plate secured to said base plate, said electro-mechanical transducer being attached to said oscillation plate;

a housing plate welded to said oscillation plate, said housing plate defining said pressure chamber;

a plurality of path plates disposed in a stack-like fashion and welded to each other, one surface of said stacked plurality of path plates being welded to said housing plate; and

an orifice plate welded to the other surface of said stacked plurality of path plates.

4,460,907

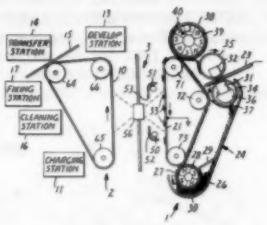
ELECTROGRAPHIC IMAGING APPARATUS

Kerry S. Nelson, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 15, 1982, Ser. No. 388,583

Int. Cl.³ G01D *15/06*; **G03G** *15/00*

U.S. Cl. 346—153.1 **6 Claims**



1. Apparatus for producing a permanent image including:

a first receptor member;

means for producing an unfixed toner powder image on said first receptor member;

means including a photoconductive member for producing a permanent image on a second receptor member using a latent image resulting from a light image received by said photoconductive member; and

means adapted for producing a light image of an unfixed toner powder image on said first receptor member and directing it so it is received by said photoconductive member.

4,460,908

PRINTING APPARATUS

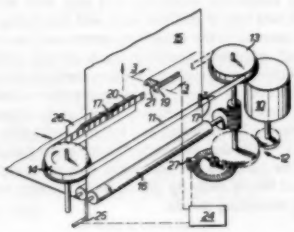
David C. Southward, Old Thatch, England, assignor to Sinclair Research Limited, Cambridge, England

Filed Feb. 22, 1982, Ser. No. 350,828

Claims priority, application United Kingdom, Feb. 26, 1981, 8106050

Int. Cl.³ G01D *15/06*

U.S. Cl. 346—155 **11 Claims**



1. Printing apparatus for use with electrosensitive paper, comprising

(a) a frame;

(b) paper feed means (16) for feeding the electrosensitive paper past a scanning position on said frame;

(c) scanning means including

(1) at least one resilient conductive stylus member (17); and

(2) means for displacing said stylus member across said scanning position, including an endless belt (11), means (13, 14) supporting said belt for endless movement across said scanning position, and means (12) for driving said belt in synchronism with said paper feed means, thereby to produce repeated scanning of lines by said

stylus member on said paper upon movement of said belt;

(d) guide means (20, 21) for maintaining said stylus member in registration with the paper during movement of the stylus across the scan; and

(e) signal generating means (24) for supplying writing signals to the stylus member in dependence on the position of the stylus member during each scan, said signal supplying means including a conductor element (19) adjacent and parallel with said guide means, said stylus member being guided and biased under compression between said guide means and said conductor element.

4,460,909

METHOD AND APPARATUS FOR ENHANCING THE RESOLUTION OF AN ELECTROPHOTOGRAPHIC PRINTER

Larry W. Bassetti; Ross B. Hooker, III, and Sherwood Kantor, all of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1981, Ser. No. 332,382

Int. Cl.[3] G01D *15/00*

U.S. Cl. 346—160 31 Claims

1. In an electrophotographic printer having a light source for writing black/white images on the photoconductor, means for developing that image, and means for fixing the image on paper, improved apparatus for enhancing the apparent resolution of the image printed on the paper, said apparatus comprising:

means for modulating the light from said light source so that black, white or at least one level of gray is produced at each picture element (pel) location on the photoconductor, said locations spatially separated such that each pel partially overlaps directly adjacent pels;

first means for controlling said modulating means to produce black pels on the photoconductor for each image to be printed on the paper; and

second means for controlling said modulating means to produce gray pels on the photoconductor directly adjacent and overlapping with those black pels defining an edge of said image, said gray pels having the effect of smoothing the contour of the black image printed on paper.

4,460,910

HETEROJUNCTION SEMICONDUCTOR

Barbara A. Chappell; Terry I. Chappell, both of Amawalk, and Jerry M. Woodall, Bedford Hills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1981, Ser. No. 324,240

Int. Cl.[3] H01L *29/80, 29/48, 29/161, 29/06*

U.S. Cl. 357—22 6 Claims

1. A field effect transistor in a monocrystalline body having an exposed surface comprising in combination

a first high conductivity region having length and width dimensions in a first plane adjacent to and essentially parallel with said exposed surface,

said first high conductivity region having

a first bandgap and

a first work function,

a second high conductivity region having length and width dimensions in a second plane essentially parallel with said first plane,

said second high conductivity region having

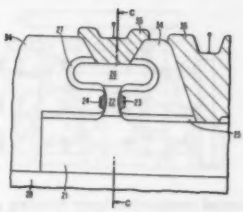
a second bandgap and

a second work function,

a channel region epitaxially contiguous with positioned between, and forming

a heterojunction with said first and said second high conductivity regions

said channel region having length and height dimensions in a plane essentially orthogonal to said first and second planes



said channel region further having

a third bandgap and

a third work function,

said first bandgap adjacent said exposed surface being larger than said third bandgap in said channel,

at least one of said first and said second work function being equal to said third work function

gate electrode means operable to control carrier flow in said channel region and,

ohmic electrode means on said first and second high conductivity regions.

4,460,911

SEMICONDUCTOR DEVICE WITH MULTIPLE PLATE VERTICALLY ALIGNED CAPACITOR STORAGE MEMORY

Roelof H. W. Salters, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 766,663, Feb. 8, 1977, abandoned. This application Jun. 12, 1980, Ser. No. 158,958

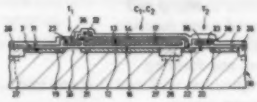
Claims priority, application Netherlands, Feb. 12, 1976, 7601416

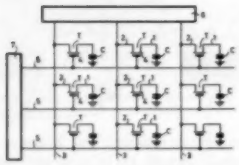
Int. Cl.[3] H01L *29/78*

U.S. Cl. 357—23.6 19 Claims

1. A semiconductor device for storing and reading information, in particular a random access memory device, comprising a semiconductor body having a surface-adjoining series of capacitors, each of said capacitors comprising respective memory cells in which information in the form of electric charge can be introduced during operation of said device, each of said capacitors comprising a first electrode that is connected to an electric switch intended for addressing and a second electrode that can be established at a reference voltage during operation, said capacitors being subdivided into groups of two each, in which said group comprises three conductive layers which, viewed on the surface of the semiconductor body, are situated above each other, the central said conductive layer being separated by barrier layers from the uppermost and the lowermost of said conductive layers, said uppermost and lowermost conductive layers comprising said first electrodes of respective

said capacitors, said central conductive layer forming with said first and second electrodes the two respective capacitors of the





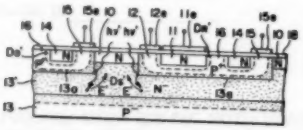
group, said central conductive layer forming a common section electrode of said capacitors.

4,460,912

SOLID STATE IMAGE SENSORS

Kazuyoshi Takeshita, Tokyo, and Masaharu Hamasaki, Zama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 27, 1982, Ser. No. 402,356
Claims priority, application Japan, Jul. 27, 1981, 56-117302
Int. Cl.³ H01L *29/78, 27/14, 31/00*
U.S. Cl. 357—24 **5 Claims**



1. A solid state image sensor comprising:

a sensing and vertical transfer portion formed on a semiconductor substrate of a first conductive type, wherein a semiconductor layer of a second conductive type with low impurity density, a plurality of semiconductor regions of the first conductive type formed in said semiconductor layer of the second conductive type and a plurality of photo-sensing areas for storing a signal charge produced in response to the light from the outside formed between each adjacent two of said semiconductor regions of the first conductive type are provided, each of said semiconductor regions of the first conductive type containing a vertical charge transfer portion for vertically transferring signal charge transferred from said photo-sensing area and an overflow drain for draining off a superfluous charge from said photo-sensing area, both of which are provided in the form of semiconductor areas of the second conductive type apart from each other therein;

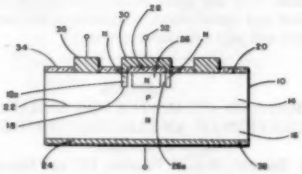
a horizontal charge transfer portion for horizontally transferring the signal charge transferred from said sensing and vertical transfer portion; and an output portion for taking out an image pickup signal output in response to the signal charge transferred from said horizontal charge transfer portion.

4,460,913

FAST SWITCHING TRANSISTOR

Norbert W. Brackelmanns, Ironia, and William Hulstrunk, Millburn, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,660
Int. Cl.³ H01L *29/06, 29/72*
U.S. Cl. 357—34 **6 Claims**



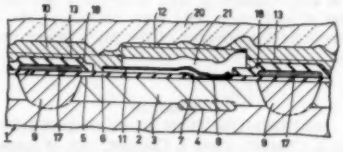
1. A transistor comprising a body of semiconductor material having first and second major surfaces; an emitter doped with atoms of one conductivity type extending into said body from said first major surface; said emitter having a hub portion and finger portions extending therefrom; a base doped with atoms of the opposite conductivity type extending into said body from said first surface and forming a PN junction with said emitter; a collector doped with atoms of said one conductivity type extending into said body from said second surface and forming a PN junction with said base; a central region doped with atoms of said one conductivity type extending into said body from said first major surface, said central region being located within said hub potion of said emitter and being spaced therefrom; an insulating layer on said first major surface, said insulating layer covering said region and the space between said central region and the periphery said hub portion and electrode means covering said insulating layer and contacting said hub portion of said emitter and said finger portions thereof.

4,460,914

PROGRAMMABLE SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME

Ties S. te Velde, and Arie Slob, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 27, 1981, Ser. No. 258,112
Claims priority, application Netherlands, May 8, 1980, 8002634
Int. Cl.³ H01L *27/04;* **G11C** *11/40*
U.S. Cl. 357—51 **1 Claim**



1. A programmable semiconductor device comprising a supporting member having at least a first line and at least a semiconductor circuit element connected to said first line by means of blowable fuse, in which the blowable fuse is situated at least over a part of its length at a distance from the supporting member or the semiconductor circuit element, characterized in that:

the blowable fuse is present in a hollow space which is present in material which is provided over the supporting member or the semiconductor circuit element;

the blowable fuse extends over a part of its length separated from walls which surround the hollow space;

said first line comprises a conductor which forms part of the

wall of the hollow space opposite to the supporting member of the semiconductor circuit element;

the other walls are formed at least partly by protective material, which protective material is provided over parts of the supporting member or the semiconductor circuit element situated beside the conductor;

said first line forms part of a first group of lines which forms a cross-bar system with a second group of lines which crosses the first group of lines, said first line being connected to a line of the second group at the area of a crossing of the cross-bar system by means of the blowable fuse and the semiconductor circuit element;

said supporting member comprises a semiconductor body in which the semiconductor circuit element is realized;

said second group of lines comprises at least a zone buried in said semiconductor body;

said buried zone is contacted at regular distances to a strip of electrically conductive material present on the surface of the semiconductor body;

said strip of electrically conductive material extends substantially parallel to the buried zone; and

said semiconductor element comprises diodes having a rectifying junction between a low-doped semiconductor zone above the buried zone and an electrode contacting the low-doped semiconductor zone.

4,460,915

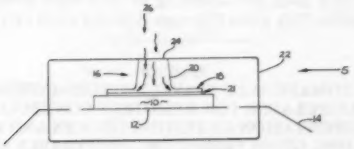
PLASTIC PACKAGE FOR RADIATION SENSITIVE SEMICONDUCTOR DEVICES

Paul R. Engel, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 28, 1981, Ser. No. 334,478

Int. Cl.³ H01L *27/14, 23/02, 39/02, 23/12*

U.S. Cl. 357—74 **4 Claims**



1. A plastic package for a programmable read-only memory device, comprising:

a radiation transmissive member suitably transmissive to a desired wave-length of electromagnetic radiation, in contact with a radiation sensitive surface of said semiconductor device;

said radiation transmissive member comprising:

a guide portion including an exterior face;

a base portion integrally coupled to said guide portion including a first surface in contact with said radiation sensitive surface;

an opaque encapsulating plastic shell surrounding said device;

said guide portion being sized so as to be visible on a surface of said shell, and to provide a radiation transmissive passage through said shell to said radiation sensitive surface;

whereby radiation incident on said shell passes through said member and onto said radiation sensitive surface of said device.

4,460,916

CERAMIC SUBSTRATE WITH INTEGRATED CIRCUIT BONDED THEREON

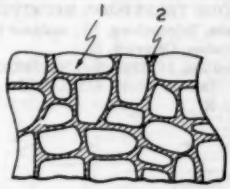
Kaoru Hashimoto, Yamato; Koichi Niwa, Tama, and Kyohei Murakawa, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 224,532, filed as PCT JP80/00078, Apr. 18, 1980, publish as WO80/02343, Oct. 30, 1980, § 102(e) Dec. 5, 1980, abandoned. This application Oct. 21, 1982, Ser. No. 435,548

Claims priority, application Japan, Apr. 18, 1979, 54-46751

Int. Cl.³ H01L *27/00*

U.S. Cl. 357—80 **1 Claim**



1. An electronic device comprising as main components an integrated circuit silicon chip bonded on a ceramic substrate, which consists essentially of, based on the weight of the substrate, 0.5~5.0% by weight of MgO and 95.0~99.5% by weight of the total of Al_2O_3 and SiO_2, the proportion of the Al_2O_3 to the SiO_2 being in the range from 50:50 to 80:20 by weight said ceramic substrate exhibiting a structure in which the grain boundaries between the mullite crystals ($3Al_2O_3.2SiO_2$) are filled with cordierite ($2MgO.2Al_2O_3.5SiO_2$), said substrate having a thermal expansion coefficient of $3.8\sim3.9\times10^{-6}$/°C. from room temperature to 500° C., which coefficient is close to that of the silicon chip, viz. $2.5\sim3.5\times10^{-6}$/°C. from room temperature to 500° C.

4,460,917

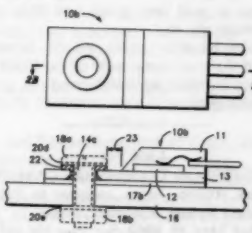
MOLDED-IN ISOLATION BUSHING FOR SEMICONDUCTOR DEVICES

William O. Rogers, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 3, 1982, Ser. No. 384,697

Int. Cl.³ H01L *23/32, 23/08, 23/30*

U.S. Cl. 357—81 **10 Claims**



1. A semiconductor device with an integral insulated mounting bushing, comprising:

an electrically and thermally conductive base member having a planar first surface for thermal coupling to an external heat sink, a second surface opposite said first surface, and a first aperture penetrating said base member from said first surface to said second surface, wherein said aperture has a first portion adjacent said first surface and a second portion adjacent said second surface, and wherein said first portion is of larger cross-sectional extent than said second portion; and

a hollow insulating sleeve fixed within and substantially filling said aperture, having a first end substantially flush with said first surface and of a cross-sectional extent corresponding substantially to said first portion of said aperture, and a second end extending beyond said second surface to form a boss of predetermined height and a cross-sectional extent larger than said first aperture and having a second aperture penetrating said base member, and wherein said second aperture is substantially coaxial with said first aperture.

4,460,918

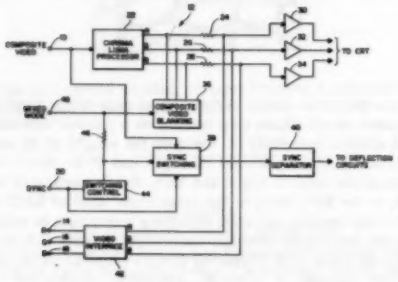
AUTOMATIC SWITCHING CIRCUIT FOR A DUAL MODE TELEVISION RECEIVER

Michael D. Flasza, Schaumburg, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jul. 14, 1982, Ser. No. 398,022

Int. Cl.³ H04N 9/535, 5/22

U.S. Cl. 358—21 R **10 Claims**



1. In a television signal receiving apparatus having red, green and blue video output stages, a first input for receiving a composite video signal and a second input for receiving an RGB signal including a sync component and red, green and blue video components, an electronic signal switching circuit comprising:

means coupling the red, green and blue video components of the RGB signal from the second input to said red, green and blue video output stages respectively;

chroma-luma processing means for deriving red, green and blue video components from the composite video signal received at the first input;

means for coupling said derived red, green and blue video components to said red, green and blue video output stages respectively; and

composite video blanking means operable in response to the presence of the sync component of the RGB siganl at the second input for blanking said derived red, green and blue video components.

4,460,919

SOLID-STATE COLOR TELEVISION CAMERA DEVICE

Yasuo Takemura, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 20, 1982, Ser. No. 380,145

Claims priority, application Japan, Jun. 10, 1981, 56-88248

Int. Cl.³ H04N 9/07

U.S. Cl. 358—44 **11 Claims**

1. A solid-state color television camera device comprising:

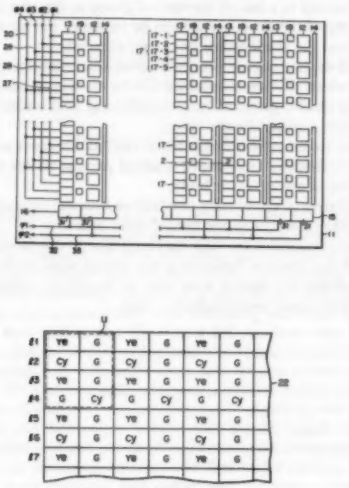
a semiconductor substrate;

a photosensor array, formed on the substrate, having a plurality of photosensors arranged in horizontal and vertical rows, each photosensor generating a charge upon receipt of an image;

a vertical transfer means, positioned adjacent each vertical row of photosensors and responsive to vertical transfer signals, for receiving the charges generated by the adjacent photosensors and transferring the charges to a horizontal transfer means;

a charge mixing means, coupled to said vertical transfer means, for mixing the charges generated by the photosensors in two adjacent horizontal rows;

a horizontal transfer means, positioned adjacent one end of each vertical row of photosensors for receiving the charges transferred by the vertical transfer means, and



transferring them as an output signal to an output terminal formed on the substrate;

a color filter array having a plurality of separate filter elements arranged in horizontal and vertical rows, each of said elements corresponding to a respective photosensor;

said color filter array comprising a plurality of unit filter arrays, each unit consisting of 2×4 filter elements of yellow (Ye), green (G), cyan (Cy) and white (W) colors.

4,460,920

AUTOMATICALLY TRAVELING TUBE-INTERIOR MANIPULATOR FOR REMOTELY CONTROLLED TRANSPORTATION OF TESTING DEVICES AND TOOLS ALONG GIVEN FEEDPATHS, PREFERABLY FOR NUCLEAR REACTOR INSTALLATIONS

Robert Weber, Uttenreuth; Alois Köppl, Wolframs-Eschenbach; Siegfried Förner; Erich Kohlert, both of Erlangen, and Otto Müller, Effeltrich, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Oct. 30, 1981, Ser. No. 316,900

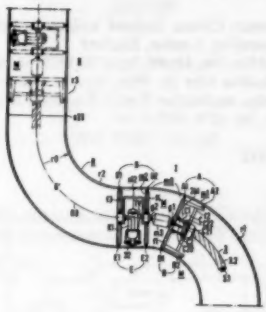
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111814

Int. Cl.³ H04N 7/18

U.S. Cl. 358—100 **20 Claims**

1. Automatically travelling tube-interior manipulator for the remotely controlled transportation of testing devices and tools along given feedpaths through the tube interior, comprising a stepping mechanism having at least two links including a rear stepping body and a front counterstepping body as seen in the direction of entry into the tube, at least one gimbal-type joint hinging said bodies to each other, clamping devices disposed on each of said bodies for clamping said bodies to the inner periphery of the tube, driving means associated with at least one of said bodies for transporting said stepping body in the axial direction of the tube relative to said counterstepping body

when said clamping device of said stepping body is engaged and said clamping device of said counterstepping body is disengaged and vice versa, guiding elements disposed on the outer periphery of each of said bodies for transportation along the



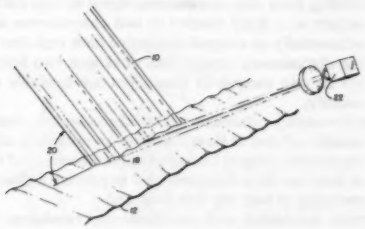
inner periphery of the tube, a line reservoir disposed outside the tube, a flexible harness of supply lines connected from said rear stepping body to said line reservoir, and a manipulator head mounted on said front counterstepping body for the testing devices and tools.

4,460,921

PROCESS FOR MONITORING CRIMPED MATERIAL

James W. Henry, and Thomas A. Mitchell, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 27, 1982, Ser. No. 437,061
Int. Cl.³ H04N 7/18
U.S. Cl. 358—107 8 Claims



1. A method of monitoring a planar section of material having generally parallel crimps, said material having a longitudinal dimension extending generally perpendicular to the crimps and a transverse dimension generally parallel to the crimps, said material generally defining a plane, comprising the steps of

(a) illuminating said material along a line generally longitudinally of said material over a plurality of said crimps by causing a plane of light, or the plane defined by sweeping a ray of light, to intersect with the surface of said material at an angle of about 30° to about 60° with the plane of the material when viewed along the longitudinal dimension, such that the light intersecting the crimped material produces a generally zig-zagged line of illumination when viewed from an angle other than that of the light source, the peaks and valleys of which illustrate the profile of the crimped material, and

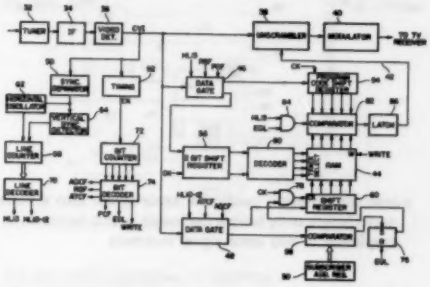
(b) recording the pattern of the generally zig-zagged line from an angle relative to the material different from the plane of light such that the profile of the material can be determined.

4,460,922

MEMORY SELECT SYSTEM FOR AN STV DECODER

James W. Ensinger, Roselle, and Melvin C. Hendrickson, Elmhurst, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Nov. 18, 1981, Ser. No. 322,481
Int. Cl.³ H04N 7/16; H04K 1/04
U.S. Cl. 358—122 11 Claims



1. A subscription television system comprising:

means for broadcasting a scrambled television signal having encoded in the vertical intervals thereof a p-bit program code and an m-bit memory read code together defining the programming category of said television signal and a p-bit subscriber authorization code and an m-bit memory write code together at least partially defining a subscriber's decode authorization status; and

a decoder comprising

means for receiving and converting said broadcast television signal to a corresponding baseband video signal;

a memory having (2^m) individually addressable p-bit memory locations;

means responsive to said baseband video signal for storing only a single p-bit subscriber authorization code at a selected p-bit memory location of said memory whose address is determined in accordance with said m-bit memory write code;

means responsive to said baseband video signal for developing a decode authorization signal in response to the detection of a predetermined relationship between a received p-bit program code and the contents of a selected p-bit memory location of said memory whose address is determined in accordance with said m-bit memory read code; and

means responsive to said decode authorization signal for unscrambling said baseband video signal.

4,460,923

PREDICTIVE CODING SYSTEM FOR TELEVISION SIGNALS

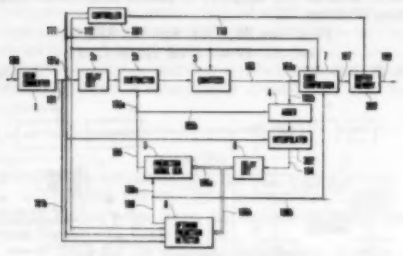
Akira Hirano, and Toshio Koga, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,841
Claims priority, application Japan, Jun. 1, 1981, 56-84028; Dec. 12, 1981, 56-199499; Dec. 21, 1981, 56-206624
Int. Cl.³ H04N 7/12
U.S. Cl. 358—136 5 Claims

1. An adaptive predictive coding system for television signals in which one optimum prediction function is selected in block unit from a plurality of prediction functions alloted to a plurality of blocks each consisting of a plurality of picture elements which divide each frame for the television signal and the optimum prediction function is used for predictive coding of the television signal, said system comprising:

means for coding said optimum prediction function into a variable word length code having the length which is minimum for a prediction function that occurs most frequently and increases as the norm of a differential vector

between the most frequently occurring prediction function and another prediction function increases; and



means for coding a prediction error signal into a variable word length code having the length which increases as the amplitude of said error signal increases.

4,460,924

DITHER QUANTIZED SIGNALLING FOR COLOR TELEVISION

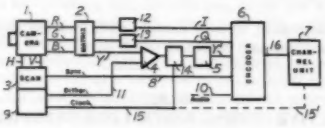
Bernard Lippel, West Long Branch, N.J., assignor to Quanticon Inc., West Long Branch, N.J.

Continuation of Ser. No. 897,860, Apr. 19, 1978, Pat. No. 4,275,411. This application Jan. 13, 1981, Ser. No. 224,679

The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.

Int. Cl.³ H04N 9/32, 9/493

U.S. Cl. 358—310 **45 Claims**



3. Apparatus for transmitting luminance and chrominance components sufficient for a colored television picture, said apparatus comprising:

means for scanning a picture according to a predetermined scanning path and for generating a set of video signals including a luminance signal substantially the analog of luminance along said scanning path and a chrominance signal substantially the analog of chrominance along said scanning path;

means for obtaining a dither signal:

means for combining said chrominance signal with with said dither signal and for quantizing with two levels the amplitude of the combined signal to produce a dither-quantized chrominance signal;

means for incorporating signals, including said dither-quantized chrominance signal, into a composite signal; and

means for transmitting said composite signal.

4,460,925

METHOD AND APPARATUS FOR DERIVING A PAL COLOR TELEVISION SIGNAL CORRESPONDING TO ANY DESIRED FIELD IN AN 8-FIELD PAL SEQUENCE FROM ONE STORED FIELD OR PICTURE OF A PAL SIGNAL

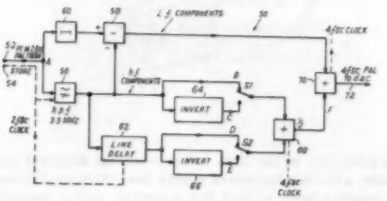
Victor G. Devereux, Chesm, England, assignor to British Broadcasting Corporation, London, England

Continuation of Ser. No. 43,609, May 29, 1979, abandoned. This application May 29, 1981, Ser. No. 268,437

Claims priority, application United Kingdom, May 30, 1978, 23926/78; Nov. 30, 1978, 46719/78

Int. Cl.³ H04N 5/93

U.S. Cl. 358—312 **4 Claims**



1. A method of deriving a PAL colour television output signal, corresponding to any one field in an 8-field PAL signal sequence, from a field or picture of said PAL signal sequence stored in a store, the stored signal comprising samples taken at twice the colour subcarrier frequency ($2f_{sc}$) at phase positions which are spaced substantially by one-eighth of the period of the subcarrier from the zero crossing points of the U-component of the chrominance component of the signal, said method comprising the steps of

providing from the stored signal samples a luminance signal and a chrominance signal;

providing from said chrominance signal at least two signals subject to a delay relative to said chrominance signal of substantially an integral number of lines such that at least the chrominance components of at least two lines which are an odd number of lines apart are available simultaneously;

simultaneously combining the chrominance component samples of said at least two lines to provide a combined chrominance signal having a sample frequency of $4f_{sc}$, said at least two lines being selected to provide a phase corresponding to said any one field; and

further combining said simultaneously combined chrominance signals with the luminance signal to form said PAL output signal.

4,460,926

TIME BASE CORRECTING DEVICE FOR AUDIO AND VIDEO SIGNALS

Shozo Nakamuta, Saitama, Japan, assignor to Pioneer Video Corporation, Tokyo, Japan

Filed May 27, 1982, Ser. No. 382,837

Claims priority, application Japan, May 29, 1981, 56-82175

Int. Cl.³ H04N 9/491

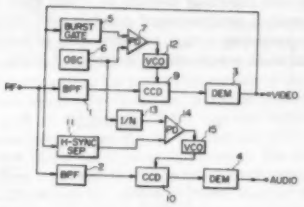
U.S. Cl. 358—325 **9 Claims**

1. A time base correcting device for a reproducing device for use with a recording medium in which color video data and audio data are recorded, comprising;

means for separating and extracting a color burst signal and a horizontal synchronizing signal from a reproduced signal output from a pickup;

video signal time base correcting means for correcting the time base of said color video data according to a first phase difference between said color burst signal and a first predetermined reference signal; and

audio signal time base correcting means for correcting the time base of said audio data according to a second phase



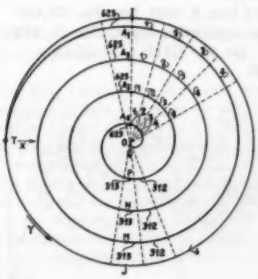
difference between said horizontal synchronizing signal and a second predetermined reference signal.

4,460,927

OPTICAL READING DEVICE FOR READING AN INFORMATION CARRIER WITH MOTION EFFECT FACILITIES

René Roméas, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Dec. 28, 1977, Ser. No. 865,331
Claims priority, application France, Jan. 4, 1977, 7700079
Int. Cl.³ H04N 5/85
U.S. Cl. 358—342 **10 Claims**



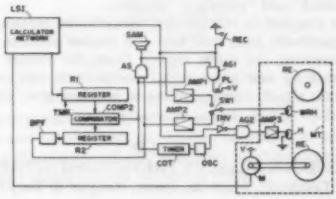
1. An optical reading device for reading an information carrier on which is recorded a sequence of animated frames along a track made of turns, each of said turns comprising two fields of video signal, a frame identification signal being recorded at the top of each of said fields, said frame identification signal comprising at least one test bit changing value at each successive frame, said optical device comprising an optical reader head, a driving device for moving said reader head, a control device for generating track jump pulses for controlling said driving device, said control device comprising means for detecting said frame identification signals, storing means for storing said identification signal during one field and comparing means for comparing two successive of said identification signals read in two adjacent fields and for delivering at least one of said track jump pulses when said two adjacent fields belong to the same frame.

4,460,928

ELECTRONIC APPARATUS FOR VOICE OUTPUT OF STORED INFORMATION

Juji Kishimoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 185,947, Sep. 10, 1980, abandoned. This application Nov. 1, 1982, Ser. No. 438,225
Claims priority, application Japan, Sep. 20, 1979, 54-121501
Int. Cl.³ G11B 5/00
U.S. Cl. 360—4 **18 Claims**



1. An electronic apparatus, comprising:

input means for selectively entering numerical data for a calculation and scheduled time data;

calculating means connected to said input means for operating on the numerical data to produce an operational result;

addressable memory means for storing the scheduled time data entered by said input means;

message memory means for storing verbal messages corresponding to the scheduled time data, each said verbal message being stored in the form of a digital signal;

real time clock means for producing an output corresponding to the time of day;

read-out means for retrieving the scheduled time data stored in said addressable memory means on the basis of the output of said real time clock means and for reading out the digital signal corresponding to the scheduled time data from said message memory means upon coincidence of the output corresponding to the time of day and the scheduled time data; and

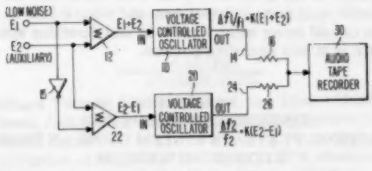
reproducing means for reproducing said verbal message from said digital signal read out by said read-out means.

4,460,929

NOISE CANCELLING SYSTEM FOR LOW FREQUENCY ANALOG RECORDING

Clifford J. Bader, West Chester, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 4, 1983, Ser. No. 472,071
Int. Cl.³ G11B 5/04, 5/43
U.S. Cl. 360—30 **10 Claims**



1. A noise cancelling system for use in the recording and playback of low frequency, low level, analog signals comprising:

first and second sources of FM carriers having center frequencies separated from each other by a predetermined amount,

means for applying said low level signals in their original and inverted senses respectively to said first and second

sources to modulate the latter in respective opposite directions, means for summing the modulated carriers of said sources, the resultant summation signal being adapted to be applied to an input terminal of a magnetic tape recorder for recording thereby,

means coupled to an output terminal of said tape recorder for separating during playback said modulated carriers, means for demodulating the latter in order to reconstruct said low level signals in their respective opposite senses, the latter signals appearing respectively with noise signal components generated by tape speed variations during the "record" and "playback" process,

means coupled to receive the demodulated signals derived respectively from said first and second sources, and for subtracting the latter signals from the former thereby cancelling said noise signal components and providing output signals corresponding to said low level signals.

4,460,930
ERRONEOUS ERASURE PREVENTING APPARATUS

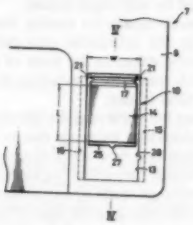
Kiyoshi Takahashi, Machida, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 328,952

Claims priority, application Japan, Dec. 16, 1980, 55-180506[U]

Int. Cl.³ G11B *15/04*

U.S. Cl. 360—60 **11 Claims**



1. An erroneous erasure preventing apparatus for a cassette having a cover and a recording medium mounted therein, comprising: a rectangular detecting aperture having long and short sides molded in the cover; a pair of guide portions formed on each of the rectangular detecting aperture long sides and opposite one another; a detachable piece to be detected simultaneously formed by molding when said cover is molded where said aperture is formed, said detachable piece having a length which is longer than a width of said rectangular detecting aperture and having engaging portions cooperable with said guide portions so as to be remountable and slidable between recording and non-recording positions in said aperture by engagement with and between said guide portions after a detachment of the detachable piece from the cover; and said detachable piece prior to detachment and when it is an integral portion of said cover being located in said detecting aperture so that it is in said recording position.

4,460,931
CONTROL APPARATUS FOR A RECORDING/PLAYBACK SYSTEM USING AN ENDLESS RECORDING MEDIUM

Hisaharu Takeuchi, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 14, 1979, Ser. No. 103,854

Claims priority, application Japan, Dec. 20, 1978, 53-156315

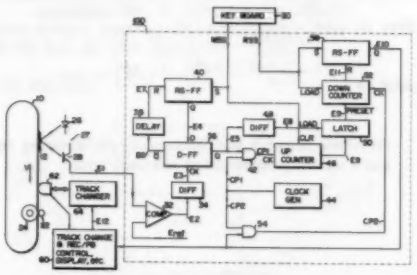
Int. Cl.³ G11B *15/18, 19/00*

U.S. Cl. 360—71 **9 Claims**

1. A control apparatus for a recording/playback system using an endless recording medium, comprising:

a recording medium having a position detecting mark attached to a fixed position thereof and driven at a given speed, said mark moving along an endless loop;

mark detecting means for detecting said position detecting mark as said recording medium is driven each time said mark passes a predetermined point in said endless loop, and for generating a mark position signal to indicate each time said mark passes said predetermined point;



first means for measuring the time interval between successive of said mark position signals and for generating and storing a first signal indicative of the one-cycle length of the recording medium; and

second means for providing in response to said first signal a timing output signal for controlling a recording or playback operation with said recording medium based on the measured one-cycle length of said recording medium.

4,460,932
A METHOD FOR SETTING HEADS OF A CASSETTE TAPE RECORDER AND A MECHANISM FOR ITS PRACTICE

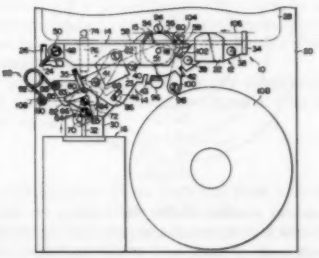
Akira Osanai, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1981, Ser. No. 328,469

Claims priority, application Japan, Dec. 15, 1980, 55-176876

Int. Cl.³ G11B *5/54, 21/02*

U.S. Cl. 360—105 **7 Claims**



1. A head setting mechanism for a cassette tape recorder which includes a base plate, a capstan shaft rotatably mounted on the base plate, a head lever moveably arranged on the base plate, a pinch roller lever movably arranged on the base plate, at least one magnetic head mounted on the head lever, and a pinch roller rotatably supported by the pinch roller lever, said mechanism comprising:

biasing means for biasing the head lever and the pinch roller lever, respectively, each toward a position where the magnetic head and the pinch roller can be in contact with a magnetic tape of a tape cassette;

a cassette holder arranged to move freely between p first

position at which the tape cassette can be inserted into the holder, and a second position at which a selected one of a recording mode and a reproducing mode can be set; and

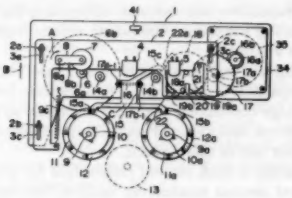
stop means for retaining the head lever and the pinch roller lever, respectively, each at a position at which the magnetic head and the pinch roller are spaced apart from the magnetic tape, the stop means including a stop member which is disposed on the base plate and which has a first portion located in the path of movement of the head lever and the pinch roller lever, and a second portion located in the path of movement of the cassette holder, the first portion being engaged with at least one of the head lever and the pinch roller lever to interrupt the movement of the head lever and the pinch roller lever toward the magnetic tape, and the second portion being arranged to be pressed by one of the cassette holder and the tape cassette within the holder, wherein the first portion of the stop member is moved away from the path of movement of the head lever and the pinch roller lever when the cassette holder moves from the first position toward the second position.

4,460,933

MODE CHANGEOVER APPARATUS FOR MAGNETIC RECORDER/PLAYER

Itsuki Ban, 3-50-18, Higashi Oizumi, Nerima-ku, Tokyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,635
Claims priority, application Japan, Sep. 5, 1980, 55-122426
Int. Cl.³ G11B *15/10*
U.S. Cl. 360—106 **12 Claims**



1. A mode changeover apparatus for a magnetic tape recorder/player, comprising:

a deck;

a support base carrying at least one magnetic head and secured to said deck by means for allowing reciprocating movement of said support base relative to said deck between playback and stop positions;

a motor mounted on said deck;

means for biasing said support base toward said stop position and moving said support base to said stop position responsive to the stopping of said motor;

means, responsive to rotation of the motor in a first direction, for moving said support base to said playback position; and

means, responsive to rotation of the motor in the opposite direction, for moving said support base to a cue and review position intermediate said playback and stop positions.

4,460,934

MAGNETIC HEAD WITH FULL AND PARTIAL COILS FOR AZIMUTH INFORMATION

Fumiaki Yamada, Akishima, Japan, assignor to Nakamichi Corporation, Tokyo, Japan

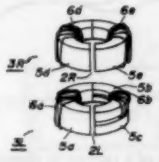
Filed Dec. 22, 1982, Ser. No. 457,064
Claims priority, application Japan, Dec. 28, 1981, 56-214093
Int. Cl.³ G11B *5/20, 5/43*
U.S. Cl. 360—12.3 **3 Claims**

1. A magnetic head for reproducing a signal recorded on a magnetic tape, said magnetic head comprising;

a core having a single gap corresponding to a recording track of said magnetic tape, said core including left-hand and right-hand core pieces and one of said core pieces being divided into upper and lower core pieces;

a first coil wound on said core to encircle the entire core;

a second coil wound to encircle only one of said upper and lower core pieces; and



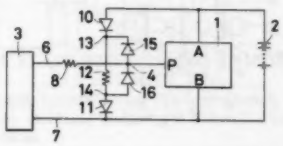
means responsive to reproduced signals picked up from said first and second coils and having an output to adjust the azimuth position of said magnetic head relative to a recorded signal on said recording track.

4,460,935

INPUT PROTECTING CIRCUIT FOR A SEMICONDUCTOR CIRCUIT COMPONENT

Eiji Uehira, Kobe, Japan, assignor to Fujitsu Ten Limited, Kobe, Japan

Filed Jun. 18, 1982, Ser. No. 390,076
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—91 **4 Claims**



1. An input protecting circuit for a semiconductor circuit component having an input terminal and powered by a direct current power source, comprising:

a series circuit having a first diode connected in series with a biasing element, said series circuit being across said direct current power source, said first diode being forward-coupled, and

a second reversely-coupled diode connected between a junction of the first diode and the biasing element, and said input terminal of said semiconductor circuit component.

4,460,936

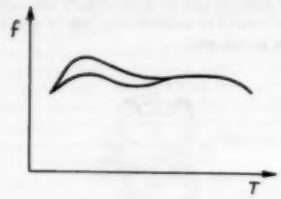
CONDENSER

Kuniharu Yamada; Yoshiyuki Gomi, and Tsuneo Handa, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 17,996, Mar. 7, 1979, abandoned. This application Feb. 3, 1981, Ser. No. 231,062
Claims priority, application Japan, Mar. 3, 1978, 53-25685
Int. Cl.³ H01G *1/01*
U.S. Cl. 361—305 **10 Claims**

1. A condenser having a hystersis effect of dielectric constant-temperature characteristic of less than 5%, comprising a barium titanate ceramic dielectric including a main component system selected from the group consisting of $BaCO_3$-TiO_2-

$SrCO_3$ and $BaCO_3$-TiO_2-SnO_2 including from about 0.01 to 1% by weight of at least one oxide selected from the group



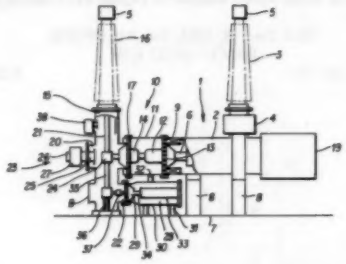
consisting of an oxide of a rare earth element and an oxide of a metallic element of Group Va of the Periodic Table.

4,460,937

GAS-INSULATED SWITCHING APPARATUS

Isao Kamata, Sagamihara, and Satoshi Oyama, Yamato, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 12, 1982, Ser. No. 377,445
Claims priority, application Japan, May 12, 1981, 56-70135
Int. Cl.³ H02B *5/02*; H01H *33/54*
U.S. Cl. 361—333 **5 Claims**



1. A gas-insulated switching apparatus comprising:

a circuit breaker including a breaking section with at least two mutually detachable contacts and a grounded tank containing said breaking section and filled with an insulating gas, said grounded tank being maintained at earth potential;

a first bushing which is vertically mounted on one side of said grounded tank, the central conductor of said first bushing being connected with one of the contact of said breaking section;

a disconnecting switch which has insulating gas sealed in it and which accommodates a disconnecting section in a tank which is arranged connected to but gas-partitioned from the circuit breaker in an axially extending region of the grounded tank on the other side of the region where said first bushing is mounted;

a bushing support tank which has insulating gas sealed in it and is arranged connected to but gas-partitioned from the said disconnecting switch in an axially extending region of the grounded tank on the side of the disconnecting switch which is the opposite to that of the said circuit breaker;

a second bushing which is vertically mounted on said bushing support tank;

a grounded switch arranged inside said bushing support tank in a region which is an axially extending region of said circuit breaker;

a lightning arrester arranged so that it is gas-partitioned from said bushing support tank below the axis of the said circuit breaker and disconnecting switch but in the direction of this axis, said lightning arrester being electrically connected to the said central conductor of the second bushing inside the bushing support tank.

4,460,938

PROCESS FOR PRODUCING HYBRID CIRCUITS WITH INTEGRATED CAPACITORS AND RESISTORS AND CIRCUITS OBTAINED BY THIS PROCESS

Alain Clei, 28, rue des Peupliers, Paris, France 75013

Filed Nov. 3, 1983, Ser. No. 549,006
Claims priority, application France, Jun. 11, 1980, 80 12982
Int. Cl.³ H05K *7/02*; C25D *5/02*
U.S. Cl. 361—411 **3 Claims**

1. A process for the production of hybrid circuits with integrated capacitors and resistors, comprising the steps of:

(a) depositing a tantalum film doped with nitrogen and oxygen on a substrate;

(b) etching said tantalum film to form a base electrode for a first capacitor, a pattern for a first resistor, first conducting bridge connecting said base electrode to one end of said pattern, and a second conducting bridge connected to the other end of said pattern;

(c) depositing a mask on said etched film for covering said first and second conducting bridges, leaving said base electrode and said pattern unmasked;

(d) performing a first anodic oxidation of the unmasked portions of said etched film, for obtaining an oxide layer having a thickness suitable for the dielectric to be given said first capacitor;

(e) making a cut in said first conducting bridge for electrically isolating said base electrode from said pattern;

(f) performing a second anodic oxidation of said pattern only, for obtaining a tantalum layer having a thickness suitable for said first resistor;

(g) removing said mask; and

(h) depositing and etching a conductive coating for forming an upper electrode for said first capacitor, a first electrical connection connected to said upper electrode, a second electrical connection connected to said second conducting bridge, and a third electrical connection for reconnecting said cut first conducting bridge.

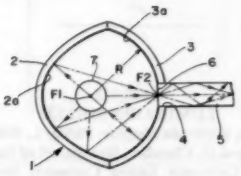
3. A hybrid circuit with integrated capacitors and resistors comprising a tantalum film doped with nitrogen and oxygen applied on a substrate, said film having been etched to form a base electrode for a first capacitor, a pattern for a first resistor, a first conducting bridge connecting said base electrode to one end of said pattern, and a second conducting bridge connected to the other end of said pattern, said first conducting bridge being severed by a cut, said first resistor having a tantalum layer with a thickness formed as a result of first and second anodic oxidations, said first capacitor having a dielectric layer with a thickness formed as a result of said first anodic oxidation only, and further comprising an upper electrode formed on said dielectric layer, and a conductive coating applied across said cut of said first conducting bridge.

4,460,939

DEVICE FOR PRODUCING A LINE OF ILLUMINATION

Takashi Murakami, and Takeshi Higuchi, both of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Oct. 15, 1981, Ser. No. 311,753
Claims priority, application Japan, Oct. 17, 1980, 55-145130
Int. Cl.³ F21V 7/04
U.S. Cl. 362—31 12 Claims



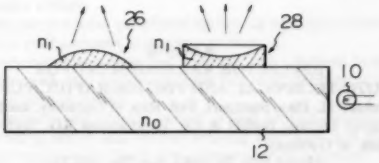
1. A device for producing a line of illumination, comprising a body having elliptical and cylindrical reflecting surfaces confronting each other, the elliptical surface having two spaced parallel focal lines, a light source disposed on one of said focal lines, a light guide in the form of a plate disposed in the plane of said focal lines and having a light inlet end which lies substantially on the other focal line of said elliptical surface, one of said focal lines being coincident with the center of curvature of said cylindrical surface, flat mirrors disposed at both ends of said body, openings between the mirrors and the two concave members through which heat from within the body can escape, said light guide being of transparent acrylic resin having a polished outer surface for internally reflecting light rays, and a heat-absorbing filter spaced a small distance in front of the light inlet end of said light guide, whereby the image of the light source on the filter will be out of focus and hence heat will be better absorbed than if the image of the light source were focussed on the filter.

4,460,940

APPARATUS FOR UNIFORM ILLUMINATION EMPLOYING LIGHT DIFFUSER

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Nov. 2, 1982, Ser. No. 438,427
Claims priority, application Japan, Nov. 7, 1981, 56-178887; Nov. 11, 1981, 56-180761; Nov. 27, 1981, 56-189999
Int. Cl.³ F21V 7/04
U.S. Cl. 362—32 15 Claims



1. A light diffusing device comprising:

a light transmission element for transmitting light emitted from a light source; and

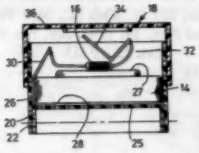
a plurality of discrete light diffusing layers positioned at spaced locations on a surface of said light transmission element, each of said light diffusing layers diffusing and discharging to the outside of said light transmission element only light component having a specific wavelength which is contained in the light propagating through said light transmission element, at least one of said light diffusing layers having a convex lens configuration.

4,460,941

FISHING LURE LIGHT

David A. Miller, Omaha, Nebr., assignor to LeBron, Inc., Omaha, Nebr.

Filed Sep. 24, 1982, Ser. No. 423,208
Int. Cl.³ F21L 7/00
U.S. Cl. 362—158 4 Claims



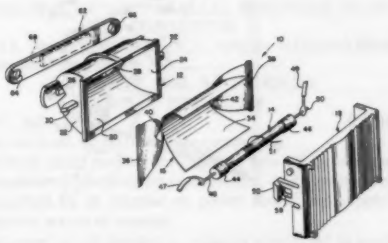
1. A fishing lure light comprising a plastic housing supporting a battery therein, said housing further supporting a water-tight cover manually moveable between a first compressed position to a second expanded position, said battery being electrically connected by electrical conductive lead means to a light bulb supported within the housing and switch means operable by the movement of the cover between said first and second positions, said housing being provided with eyelet means receiving a fishing line for attachment thereto, said housing having a cup-shaped cylindrical configuration and said cover fitting closely over an open top of said housing, said housing and cover being axially moveable toward and away from one another in a close friction fit sufficient to withstand water pressure when the lure light is immersed in water while retaining a water-tight relation to effect the operation of said switch means.

4,460,942

ELECTRONIC FLASH WITH FLASHTUBE RETENTION STRAP

Donato F. Pizzuti, Lynnfield, and Narvous Stamps, Jr., Framingham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 13, 1983, Ser. No. 503,802
Int. Cl.³ F21S 3/00
U.S. Cl. 362—217 8 Claims



1. In an electronic flash of the type having a reflector housing with two opposed side wall sections arranged to define an open ended cavity wherein each of the side wall sections includes an opening therethrough, an elongated flashtube disposed within the cavity such that the opposite end portions thereof extend respectively through the openings in the side walls, and a light reflective surface located interiorly of the reflector housing so as to reflect light through the open end of the cavity, the improvement comprising:

an elongated elastomeric strap having openings therethrough at opposite ends thereof for engaging respec-

tively the opposite end portions of the flashtube which extend through the side wall openings, said strap extending across the exterior of the reflector housing between the side walls so as to yieldably bias the flash tube toward the portion of the reflector housing across which said strap extends.

4,460,943

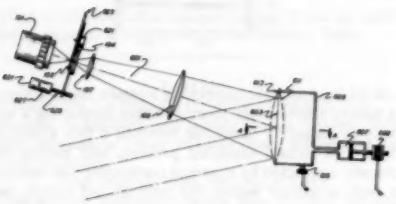
AZIMUTH AND ELEVATION CONTROL SYSTEM

Michael Callahan, 201 W. 85th St., New York, N.Y. 10024

Filed Nov. 19, 1982, Ser. No. 443,128

Int. Cl.³ F21V *17/02*

U.S. Cl. 362—276 **18 Claims**



1. In a light projector suitable for performance lighting and capable of beam azimuth and elevation adjustment, the improvement comprising: means for controlling beam azimuth and elevation from a remote location, said means for controlling including an input device sensing the location of the operator's finger, hand, or a stylus or mouse in two dimensions by non-mechanical means.

4,460,944

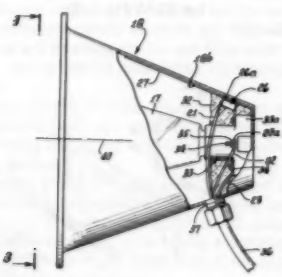
HEAT SENSITIVE POOL LIGHT

Manochehr Gordbegli, Santa Ana, and Joe Mendoza, Garden Grove, both of Calif., assignors to Purex Pool Products, Inc., Lakewood, Calif.

Filed May 17, 1983, Ser. No. 495,524

Int. Cl.³ F21V *25/04*

U.S. Cl. 362—276 **6 Claims**



1. In a light assembly adapted to illuminate liquid below a liquid surface, the combination that comprises,

(a) a lamp unit including a metallic housing adapted to be cooled by heat transfer to the liquid, a lamp socket, and lamp circuitry,

(b) a thermostat coupled to the lamp circuitry to control electrical energization of the lamp, and

(c) an enlongated, substantially flat and heat conductive metallic strip associated with said housing and thermostat to become increasingly heated for changing the conductive state of the lamp in response to diminished cooling of the housing by said liquid,

(d) the metallic strip being located at the inner side of said housing and in heat transfer relation with said inner side along the strip length, the outer side of the housing adapted to be contacted by liquid,

(e) the thermostat located proximate a portion of the strip near the lamp socket,

(f) the strip consisting of an elongated and good heat conducting metal extending upwardly and along the slant height dimension of said housing which is frusto-conical, and away from the thermostat.

4,460,945

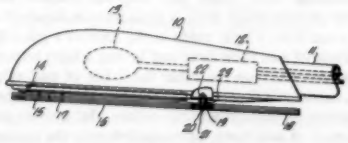
LUMINAIRE SHIELD

Alexius C. Chan, Hacienda Heights; Phillip L. Wheeler, Laguna Hills, and Lloyd H. Chandler, Orange, all of Calif., assignors to Southern California Edison Company, Inc., Rosemead, Calif.

Filed Sep. 30, 1982, Ser. No. 431,811

Int. Cl.³ F21V *29/00*

U.S. Cl. 362—294 **3 Claims**



1. A luminaire comprising a housing for a light source, said light source including an electric converter element, a lamp socket for receiving a lamp, a light diffusing lens mounted in an aperture in the housing, and a transparent laminate shield mounted on the bottom of the housing remote from the light source, and with the lens between the light source and shield, the shield being spaced from the lens about at least part of the shield perimeter to form a vent between said part of the perimeter and the lens whereby heat generated by the light source is permitted to escape through said vent, said shield having a planar surface substantially parallel to the light diffusing lens, and extending to protect the electric converter element, said shield being of a thickness sufficient to protect the lens and converter element against a firearm projectile.

4,460,946

REFLECTOR ARRANGEMENT FOR PHOTO-TECHNICAL AND PHOTOGRAPHIC PURPOSE

Bernhard H. Tinz, Stuttgart, Fed. Rep. of Germany, assignor to Lunos Lüftung GmbH & Co. Ventilatoren KG, Berlin, Fed. Rep. of Germany

Filed Feb. 24, 1982, Ser. No. 351,783

Claims priority, application European Pat. Off., Mar. 6, 1981, 81101611.2

Int. Cl.³ F21V *17/02*

U.S. Cl. 362—319 **9 Claims**

1. A reflector arrangement for photo-technical and photographic purposes comprising:

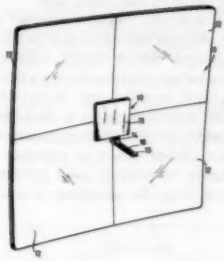
a reflector screen; and

a mounting device for supporting said reflector screen;

said mounting device including a reflecting front plate for retaining the reflector screen in combination with a rearwardly provided supporting device;

said front plate forming one arm of a clamping hinge, said

clamping hinge including a second arm designed as a holding rail;



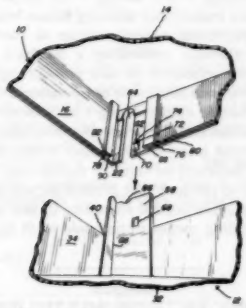
said reflector screen including several plate-shaped elements each clamped at one corner between the front plate and the supporting device.

4,460,947

LIGHT FIXTURE HOUSING INCLUDING SNAP LATCH

James P. Kelly, Waterford, Wis., assignor to McGraw-Edison, Rolling Meadows, Ill.

Filed Apr. 7, 1983, Ser. No. 482,799
Int. Cl.³ F21V *17/00*
U.S. Cl. 362—374 **15 Claims**



1. A light fixture housing, comprising:
an upper housing including a top and an upper housing side wall, said upper housing side wall defining at least one upper corner,
a tang on the inner peripheral surface of said upper housing side wall adjacent said upper corner,
a bottom housing including a bottom and a bottom housing side wall, said bottom housing side wall defining at least one bottom corner,
a flange on said bottom corner of said bottom housing extending above said bottom housing side wall, and an apperture in said flange for cooperative engagement with said tang on said inner peripheral surface of said upper housing side wall, thereby to securely hold together said upper housing and said lower housing.

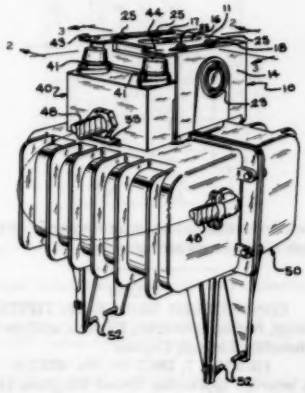
4,460,948

UNIVERSAL LUMINAIRE MOUNT

Hane M. Malola, Crawfordsville, Ind., assignor to National Service Industries, Atlanta, Ga.

Filed Apr. 28, 1983, Ser. No. 489,583
Int. Cl.³ F21V *21/00*
U.S. Cl. 362—396 **16 Claims**

1. A mounting apparatus for attaching luminaires to a support member of a building structure and connecting such luminaires with a source of electricity comprising, in combination:
a central housing member having means to attach such luminaire to such support member and means to connect with such source of electricity;
a ballast housing adjacent with said central housing and detachable therefrom;
a fuse housing having at least one fuse member interconnected between said central housing and said ballast housing, said fuse housing being in communication with said



ballast housing whereby said fuse housing receives electricity from such source of electricity through said central housing and directs such electricity to said ballast housing; and
means for interconnecting said fuse housing and said ballast housing with said central housing, said interconnection means including means to interlock said fuse housing and said ballast housing with said central housing whereby said fuse housing must be detached from said central housing prior to detaching said ballast housing from said central housing.

4,460,949

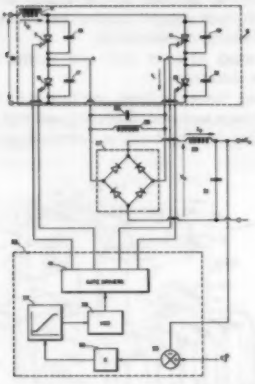
HIGH FREQUENCY PARALLEL RESONANT DC-DC CONVERTER

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,761
Int. Cl.³ H02M *3/315*
U.S. Cl. 363—28 **9 Claims**

1. A resonant dc-dc converter comprising:
a current input inverter having gate turn off switch means capable of blocking reverse current, said inverter being supplied by an external dc power source and supplying square waves of current;
a resonant circuit having an inductor connected in parallel with a capacitor, the parallel combination of said inductor and capacitor being coupled to the output of said inverter;
rectifier means coupled to said resonant circuit to rectify sinusoidal voltage across said resonant circuit to provide a dc output voltage; and
control means for controlling the dc output voltage by varying the frequency at which said gate turn-off switch means operate, said control means having comparison means for comparing a commanded voltage to the output voltage to develop an error signal, a voltage controlled oscillator coupled to switch means, and limit means for providing a lagging load to said inverter by limiting the

error voltage supplied to said voltage controlled oscillator so that the switching frequency of the switch means is at



or below the damped resonant frequency of the resonant circuit to reduce switching losses.

4,460,950

CONTROLLED BRIDGE RECTIFIER

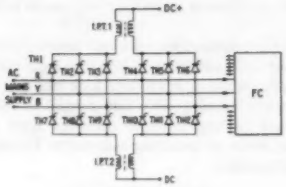
David Finney, Northamptonshire, England, assignor to Gec-Elliott Automation Limited, England

Filed Oct. 7, 1982, Ser. No. 433,251

Claims priority, application United Kingdom, Oct. 9, 1981, 8130584

Int. Cl.³ H02M *7/155*

U.S. Cl. 363—44 **8 Claims**



1. A bridge rectifier comprising a plurality of controlled-rectifier bridge circuits having common A.C. terminals and common D.C. terminals for connection to a load drawing a substantially constant D.C. current, and firing circuit means arranged to fire like-polarity controlled-rectifiers of each bridge circuit in phase sequence and to fire corresponding controlled-rectifiers of the plurality of bridge circuits in a sequence such that said corresponding controlled-rectifiers are rendered conductive for respective periods which overlap so as to provide regularly graduated A.C. current pulses.

4,460,951

CONTROL CIRCUIT ARRANGEMENT FOR A SELF-START POWER SUPPLY

William S. Fenter, Marlboro, and Arthur E. Schott, Billerica, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jul. 1, 1982, Ser. No. 394,060

Int. Cl.³ H02M *3/335*

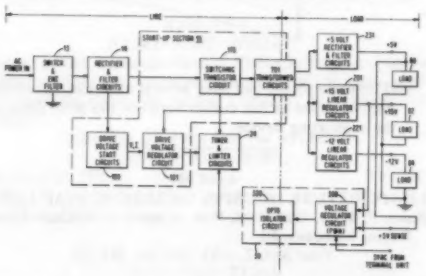
U.S. Cl. 363—49 **34 Claims**

1. A switching regulator power supply coupled to a source of input AC line voltage through a DC source of rectified and filtered AC line voltage, said supply including a start-up circuit coupled to said DC source, said start-up circuit comprising:

primary transformer winding means connected to said DC source;

voltage regulator circuit means connected to said primary transformer winding means and operative to generate a predetermined output voltage for enabling said primary transformer winding means to be switched on and off during each cycle of operation; and

control circuit network means connected to said primary transformer winding means, to said DC source and to said voltage regulator circuit means, said control network circuit means being operative during a first time interval in response to said rectified and filtered AC line voltage from said DC source to apply a predetermined value of current to said voltage regulator circuit means, said voltage regulator circuit means in response to said current being operative to produce said predetermined output voltage for starting the switching of said primary trans-



former winding means during a first cycle of operation, said primary transformer winding means being enabled by said predetermined output voltage to cause current to flow therethrough generating a feedback voltage and current for application to said voltage regulator circuit means during said first cycle of operation and said control circuit network means being conditioned by said DC source to reduce said current to a minimum value during a second time interval when said feedback voltage and current is sufficient in value to enable said regulator circuit means to produce said predetermined output voltage for sustaining the normal switching of said primary transformer winding means during said each cycle of operation.

4,460,952

ELECTRONIC RECTIFIER/MULTIPLIER/LEVEL SHIFTER

Vance Risinger, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 13, 1982, Ser. No. 377,729

Int. Cl.³ H02M *7/08, 7/10*

U.S. Cl. 363—61 **7 Claims**

1. An electronic circuit device for providing multiplication and rectification of an analog signal, said circuit device comprising:

an input for receiving the analog signal;

plural capacitor means operably coupled to said input and including at least first and second capacitors arranged to be alternatively coupled in parallel relationship in a first phase and in series relationship in a second phase;

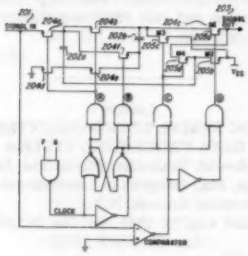
a first switching network operably connected to said plural capacitor means and having first and second switching relationships with respect to said at least first and second capacitors interconnecting said at least first and second capacitors in parallel relationship and in series relationship respectively;

control means operably connected to said first switching network for determining the switching relationship of said first switching network with respect to said at least first and second capacitors;

said first switching network initially being in said first switching relationship interconnecting said at least first and second capacitors in parallel relationship for recep-

tion of the analog signal from said input and being responsive to said control means for switching to said second switching relationship interconnecting said at least first and second capacitors in series relationship such that the original analog signal is multiplied; and

a second switching network operably connected to the



output of said plural capacitor means and having first and second switching relationships with respect to said at least first and second capacitors depending upon the polarity of the analog signal received at said input for selectively providing as the output signal, the signal from one of said capacitors such that the output signal is rectified to be of a particular polarity.

4,460,953

SIGNAL VOLTAGE DIVIDING CIRCUIT

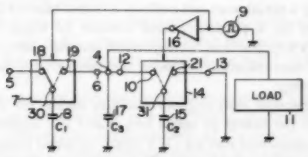
Isao Fukushima; Kazuyoshi Kuwahara; Hideo Nishijima; Yasunori Kobori, and Keiichi Itoigawa, all of Katsuta, Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering, Ltd., both of Tokyo, Japan

Filed May 6, 1982, Ser. No. 375,585

Claims priority, application Japan, May 8, 1981, 56-68367; May 8, 1981, 56-68370; Jun. 12, 1981, 56-89674; Jun. 12, 1981, 56-89675

Int. Cl.³ H02M *3/06*

U.S. Cl. 363—62 **10 Claims**



1. A signal voltage dividing circuit comprising:

first and second switched capacitors each having a first terminal, a second terminal, a third terminal and a capacitor connected to said third terminal which is selectively connected to said first or second terminal;

clock signal generating means for generating a clock signal and thereby driving said first and second switched capacitors in opposite phase with each other;

an input terminal connected to said first terminal of said first switched capacitor;

means for connecting said second terminal of said first switched capacitor to said first terminal of said second switched capacitor;

an output terminal connected to one of the terminals of said second switched capacitor;

means for connecting said second terminal of said second switched capacitor to a reference potential; and

a holding capacitor connected between said output terminal and said reference potential.

4,460,954

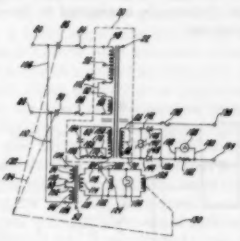
FERRORESONANT POWER SUPPLY

Leroy W. Aiken, Collegeville, Pa., and Elmo E. Moyer, Saratoga Springs, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 6, 1982, Ser. No. 395,522

Int. Cl.³ H02M *7/06*

U.S. Cl. 363—75 **10 Claims**



1. A ferroresonant power supply, comprising:

input means for connection to a source of alternating current power;

ferroresonant transformer means operably connected to said input means;

rectifying means operably connected to said ferroresonant transformer means for rectifying an electrical output of said ferroresonant transformer;

said ferroresonant transformer including a primary winding, a secondary winding and a resonating winding, said primary winding being operably connected to said input means, said secondary winding being operably connected to said rectifyng means, said resonant winding being connected to a resonant capacitor;

said primary winding and said secondary winding and said resonant winding being mounted on a transformer core, said transformer core being provided with damping means for preventing electrical oscillation of said ferroresonant power supply;

said transformer having an air gap interposed in a flux path thereof;

said damping means being a strip of nonmagnetic metallic material interposed in said air gap.

4,460,955

STABILIZING POWER SUPPLY APPARATUS

Masayuki Hattori, Hachioji, and Shigeo Nakamura, Hino, both of Japan, assignors to Fanuc Ltd., Tokyo, Japan

Filed Dec. 22, 1982, Ser. No. 452,139

Claims priority, application Japan, Dec. 25, 1981, 56-211459

Int. Cl.³ H02P *13/24*

U.S. Cl. 363—91 **4 Claims**

1. A stabilizing power supply apparatus, comprising:

an inverter for producing a pulsed voltage;

a magnetic amplifier, operatively connected to said inverter, for pulse-width modulating the pulsed voltage from said inverter and producing a modulated voltage;

a rectifying circuit, operatively connected to said magnetic amplifier, for rectifying the modulated voltage from said magnetic amplifier and producing a rectified voltage;

a smoothing circuit, operatively connected to said rectifying circuit, for smoothing the rectified voltage from said rectifying circuit and producing an output voltage;

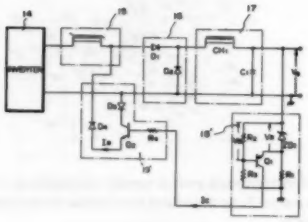
an error sensing circuit, operatively connected to said smoothing circuit to receive the output voltage from said smoothing circuit, for sensing a difference between the magnitude of said output voltage and the magnitude of a reference voltage and producing an error signal, the magnitude of the error signal corresponding to the difference, the error signal serving as a control current; and

an amplifier circuit, operatively connected to said magnetic amplifier and said error sensing circuit to receive the

control current from said error sensing circuit, for amplifying the control current into a reset signal for said magnetic amplifier, said amplifier circuit comprising:

an NPN-type transistor, having a base operatively connected to said error sensing circuit, a collector and an emitter, for amplifying the control current from said error sensing circuit into the reset current;

a first diode having an anode terminal operatively connected to a negative power supply line and a cathode terminal operatively connected to the collector of said transistor; and



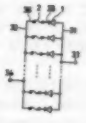
a second diode, having an anode terminal operatively connected to the emitter of said transistor and a cathode terminal operatively connected to said magnetic amplifier, for supplying the reset current to said magnetic amplifier to hold the magnitude of the output voltage of said smoothing circuit constant by regulating the on/off timing of said magnetic amplifier in accordance with the difference between the magnitude of the output voltage and the magnitude of the reference voltage.

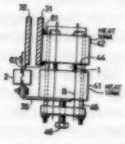
4,460,956

RECTIFYING DEVICE

Yoshihiro Hamasaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 387,893
Claims priority, application Japan, Jun. 15, 1981, 56-88483[U]
Int. Cl.³ H01L *23/34*
U.S. Cl. 363—141 **5 Claims**





1. A rectifying device, comprising:

a conductor (31);

first cooling means (42) electrically connected to and rigidly secured in parallel to said conductor;

a securing frame (45) secured to said first cooling means;

a second cooling means (41) secured to said frame;

a rectifying element (1) disposed between said first and second cooling means in series with respect to a direction of cooling air flowing through said rectifier, said air flow being parallel to the line of attachment of said first cooling means to said conductor; and

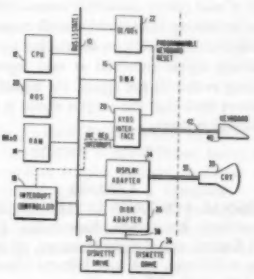
screw means attached to said frame for pressing said second cooling means and said rectifying element toward said first cooling means.

4,460,957

SELF-PACING SERIAL KEYBOARD INTERFACE FOR DATA PROCESSING SYSTEM

Lewis C. Eggebrecht, Rochester, Minn., and Jesus A. Saenz, Coral Springs, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,070
Int. Cl.³ G06F *15/02*
U.S. Cl. 364—200 **14 Claims**



1. In a data processing system including a system bus for transferring address, data and control signals among a central processing unit, a memory and a self-scanning serial keyboard, all connected to the bus, said keyboard having a clock line for transmitting a keyboard out clock signal and a data line for transmitting a serial scan out code in a frame headed by a start bit followed by a predetermined number of serial data bits identifying a key position, an improved interface for providing two-way communication between the bus and the keyboard, and comprising:

serial-to-parallel shift register encoder means for storing in parallel the frame of serial bits under the control of the clock signal and having (1) a clock terminal connected to said keyboard clock line, (2) a serial data input terminal connected to said keyboard data line, (3) said predetermined number of parallel output data lines connected to the bus, and (4) a control line coupled to the most significant stage of said encoder, said encoder having the same number of stages as the number of bits in a frame, whereby, when said encoder contains said start bit signal and said predetermined number of data bits, a control signal is produced on said control line; and

control means, responsive to said control signal and to said keyboard out clock signal, for applying a central processing unit interrupt signal to the bus and for applying to said data line a disabling signal which prevents further transmission of data bits by the keyboard,

said control means also being responsive to a clear signal from the central processing unit to remove the disabling signal from the data line when said data bits have been transferred from said encoder means to said bus, thereby permitting transmission of another scan code frame from the keyboard to said encoder means.

4,460,958

WINDOW-SCANNED MEMORY

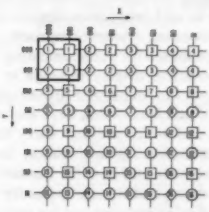
Lauren A. Christopher, Weedsport, N.Y.; Glenn A. Reitmeier, Trenton; Terrence R. Smith, Clementon, both of N.J., and Christopher H. Strolle, Philadelphia, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1981, Ser. No. 298,268

Claims priority, application United Kingdom, Jan. 26, 1981, 8102281; Mar. 23, 1981, 8108967

Int. Cl.³ G06F *13/06*

U.S. Cl. 364—200 10 Claims



1. A memory system comprising:

a plurality 2^{m+n} in number of component memories each respectively identified by a distinct combination of binary column and row numbers topologically descriptive of its position in a hypothetical 2^m by 2^n matrix, the column number thus associated with each component memory being at least one but no larger than 2^m and the row number associated with each component memory being at least one but no larger than 2^n, where m and n are positiive integers at least one of which exceeds zero, each component memory having a respective data bus, each component memory having p respective column address lines for receiving a respective component memory column address, and each component memory having q respective row address lines for receiving a respective component memory row address, where p and q are positive integers larger than one;

means for generating memory system column addresses one at a time, each with p more significant bits and m less significant bits, the degrees of significance being respective to each other;

means for generating memory system row addresses one at a time, each with q more significant bits and n less significant bits, the degrees of significance being respective to each other;

a multiplexor for selectively accessing the data busses of said component memories in a succession of patterns according to the m less significant bits of the current said memory system column address and the n less significant bits of the current said memory system row address;

means for applying the p more significant bits of the current said memory system column address to a set of component memories identified by column number of 2^m, as their component memory column address;

respective means associated with each other set of component memories identified by respective like column number for applying, as their component memory column addresses, the p more significant bits of the current said memory system column address each associated means for applying receives as one of a pair of respective input signals, applying them either directly or as augmented by unity, responsive to the other of its respective input signals;

means for determining whether the m less significant bits of the current said memory system column address equal or exceed the column number of each said other set of memories to generate the respective said other input signal received by the means for applying component memory column address associated with said other set of memories identified by the column number which contributed to the generation of that said other input signal;

means for applying the q more significant bits of the current said memory system row address to said component memories identified by row number of 2^n, as their component memory row address;

respective means associated with each other set of component memories identified by respective like row number for applying, as their component memory row addresses, to each other set of memories identified by the same row number the q more significant bits of the current said memory system address each associated means for applying receives as one of a pair of its respective input signals, applying them either directly or as augmented by unity, responsive to the other of its respective input signals;

means for determining whether the n less significant bits of the current said memory system row address equal or exceed the row number of each said other set of memories to generate the respective said other input signal received by the means for applying component memory row address associated with said other set of memories identified by the row number which contributed to the generation of that said other input signal; and

means, responsive to data supplied in parallel from said component memories via said selectively accessed data busses for combining said parallelly supplied data in prescribed proportions.

4,460,959

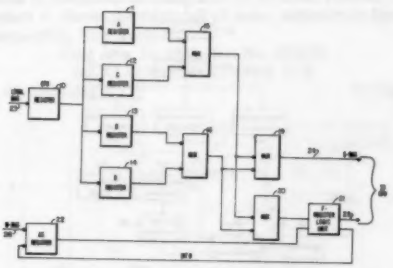
LOGIC CONTROL SYSTEM INCLUDING CACHE MEMORY FOR CPU-MEMORY TRANSFERS

Richard A. Lemay, Carlisle; Philip E. Stanley, Westboro; William E. Woods, Natick, and David E. Cushing, Chelmsford, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 16, 1981, Ser. No. 302,904

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 3 Claims



1. A hardware/firmware logic control system in a data processing system including a central memory system and a central processing unit (CPU) with a firmware control system in electrical communication with said logic control system by way of a local communication bus, said logic control system which comprises:

(a) cache memory means in electrical communication with said central memory system and having control means responsive to said CPU for requesting and receiving binary information including CPU instruction words and procedure words from said central memory system;

(b) first register means responsive to said firmware control system for storing said binary information received from said cache memory means;

(c) plural register means in electrical communication with said first register means and having both paired clock inputs for accommodating the receipt of plural single words in each register of said plural register means and double words in selected pairs of registers of said plural

register means from said first register means, and independent output-enable inputs for accommodating the accessing of selected registers of said plural register means by said CPU;

(d) multiplexer means in electrical communication with said CPU and responsive to said firmware control system and to selection control signals for receiving said binary information from said selected registers of said plural register means, and supplying said procedural words separately to said CPU; and

(e) logic selection control means responsive to said firmware control system for issuing information requests to said central memory system by way of said cache memory means, enable signals to said output-enable inputs, said selection control signals to said multiplexer means, and clock signals to said paired clock inputs for loading said selected registers of said plural register means with said binary information from said first register means while accommodating the selectable accessing of remaining registers of said plural register means by said CPU to effect an information transfer rate compatible with the bandwith of said central memory system, the access rate of said cache memory means, and CPU execution speeds.

4,460,960

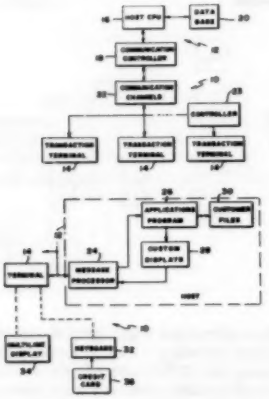
TRANSACTION EXECUTION SYSTEM HAVING KEYBOARD AND MESSAGE CUSTOMIZATION, IMPROVED KEY FUNCTION VERSATILITY AND MESSAGE SEGMENTATION

Robert W. Anderson, Morgan Hill; May L. Gee, San Jose, both of Calif., and Alice K. McMullen, Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 9,384, Feb. 2, 1979, Pat. No. 4,319,336. This application Oct. 14, 1981, Ser. No. 311,373

Int. Cl.³ G06F *3/023, 3/04, 3/14*

U.S. Cl. 364—200 **21 Claims**



9. A transaction execution system which is shared by a plurality of institutions, the transaction execution system including a plurality of terminals, each said terminal in communication with a common host data processing system, characterized in that

each said terminal comprises:

input means operable by a customer of a specific one of said institutions for entering transaction data, said input means including a plurality of keys selectively actuatable by said customer for selecting different transaction steps;

display means for displaying messages to said customer;

designating means responsive to institution identification data entered by said customer for designating selected ones of said plurality of transaction keys as interactive keys;

means responsive to actuation by said customer of an interactive transaction key for starting an interactive transaction by communicating to the host data processing system an interactive start message; means for executing an interactive transaction, including first means for receiving from the host data processing system for display at said display means an interactive display message requesting customer entry of data at the terminal and second means for communicating to the host data processing system an interactive response message in response to said interactive display message; and

the host data processing system comprises:

communication means for communicating to said terminal (a) said interactive display message in response to an interactive start message, and (b) information designating which of said transaction keys are interactive transaction keys and which are data entry transaction keys;

storage means for storing information for a plurality of customer accounts and possible transactions; and

means for accessing said storage means for generating said interactive display message and for authorizing transactions with respect to a customer account for said customer.

4,460,961

METHOD OF AND DEVICE FOR DETERMINING A RADIATION ABSORPTION DISTRIBUTION IN A PART OF A BODY

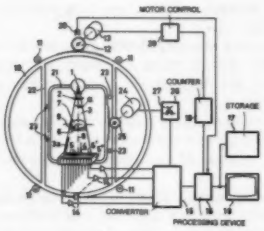
Johannes C. A. Op de Beek, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 7, 1979, Ser. No. 73,572

Claims priority, application Netherlands, Mar. 14, 1979, 7902015

Int. Cl.³ G06F *15/42*

U.S. Cl. 364—414 **7 Claims**



1. A method for determining a radiation absorption distribution in a part of the body of the type which comprises the steps of:

irradiating the part of the body from a plurality of different directions with at least one narrow beam of radiation which penetrates the body;

for each of the directions, measuring the attenuation of the beam along a measuring path which coresponds to the path of the beam through the body; and

calculating radiation absorption values in elemental regions of a matrix of elemental regions of the body using the measured values of radiation attenuation;

wherein, as an improvement, the radiation absorption value for each elemental region is calculated by separately determining the contribution of each measured attenuation value to the absorption value in each elemental region by separately multiplying each measured attenuation value by a weighting factor which is a function only of the shortest distance between the relevant elemental region

and the measuring path along which the attenuation value was calculated; and

for each elemental region summing the individual contributions to determine a total absorption factor for the elemental region.

4,460,962

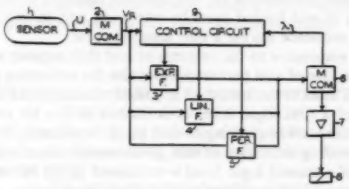
ANTI-SKID BRAKE CONTROL SYSTEM

Klaus Pape, and Gerhard Ruhanu, both of Hanover, Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 420,412

Int. Cl.³ B60T *8/08*

U.S. Cl. 364—426 **7 Claims**



1. An anti-skid vehicle brake control arrangement having at least one sensor for sensing the speed of a wheel of a vehicle and producing speed signals in accordance therewith, and having an electronic system which converts the speed signals into control signals for controlling a solenoid valve which is connected to a brake cylinder, characterized by,

(a) a first microcomputer for receiving the speed signals and said sensor for converting the speed signals into digital data words,

(b) a filter circuit connected to the first microcomputer, said filter circuit having an exponential characteristic filter, a linear characteristic filter, and a percentile characteristic filter,

(c) a control circuit connected to said filter circuit for activating at least one of said filters of said filter circuit for filtering said digital data words when an interference pulse occurs on the speed signals of said sensor, and,

(d) a second microcomputer connected to said control circuit for producing anti-skid control signals from the filtered digital data words.

4,460,963

VEHICULAR ANTI-SKID BRAKING SYSTEM

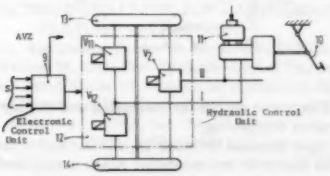
Heinz Leiber, Oberriexingen; Dieter Roller, Herrenberg, and Volker Braschel, Heilbronn, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,242

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1982, 3200725

Int. Cl.³ B60T *8/08*

U.S. Cl. 364—426 **9 Claims**



1. Braking system for a vehicle having

a brake control element (10);

a wheel axle, and wheels (13, 14) located at respective sides of the vehicle on said axle;

a first braking system (I) controlled by said brake control element, connected to and acting on the respective wheels of the vehicle on said axle;

a second braking system (II) independent of said first braking system and also controlled by said brake control element, connected to and acting on the respective wheels of the vehicle on said axle, the second braking system acting on the wheels, independently of the first braking system;

and a wheel anti-lock or anti-skid system (9) providing control signals (E_{11}, A_{11}; E_{12}, A_{12}) upon sensing of a tendency of at least one of the wheels, upon application of braking pressure thereto, to lock

wherein

the control signals derived from said brake anti-lock or anti-skid system (9) are applied to one of the brake systems (I);

and derivative braking control means (15–25) are provided, connected to and receiving the control signals applied to said one brake system (I) and generating derived control signals (A_2, E_2) applied to and controlling braking pressure in the second braking system (II) as a function of the nature and timing of the control signals applied to said one control system (I).

4,460,964

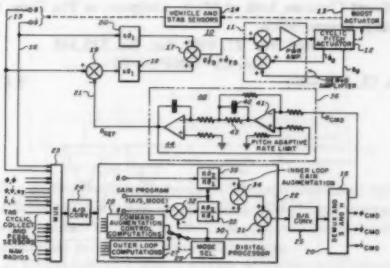
MULTIAXIS HARDOVER PROTECTION APPARATUS FOR AUTOMATIC FLIGHT CONTROL SYSTEMS

Edmund R. Skutecki, Glendale; Carl D. Griffith, Phoenix, and Robert A. Bowie, Glendale, all of Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,531

Int. Cl.³ G06F *15/50*; G06G *7/78*

U.S. Cl. 364—434 **15 Claims**



1. A hybrid digital/analog automatic flight control system for control of an aircraft with respect to the control axes thereof comprising

an analog inner loop associated with each control axis,

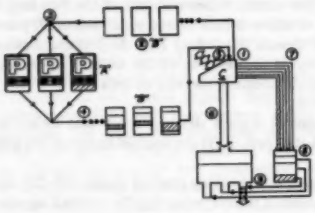
digital processor means responsive to aircraft sensor signals for deriving command signals for said inner loops, and

adaptive rate limit means for coupling command signals from said digital processor means to at least one of said associated inner loops such that rapidly changing command singals are transmitted unaltered prior to a predetermined limit and thereafter are transmitted at a limited lower rate.

4,460,965
DEVICE FOR THE USE OF AND EASILY CARRIED BY AN INDIVIDUAL

Karl B. Trehn, Lillgården, Överby, 150 12 Stjärnhov, and Nils H. Swahn, Granevägen 8, 182 65 Djursholm, both of Sweden

Filed Feb. 6, 1981, Ser. No. 232,223
Claims priority, application Sweden, Mar. 2, 1979, 79018891
Int. Cl.³ G06F *15/30*; G07C *1/30*
U.S. Cl. 364—464 7 Claims



1. A method for recording financial transactions in a cashless payment system having a portable device, which includes a main memory and plural accounting memories, and a terminal by which information relating to financial transactions is transferred into at least one of the memories in the portable device, comprising the steps of:

upon the payment of a fee, loading the main memory of the portable device, via the terminal, with units of information corresponding to the amount of the fee;

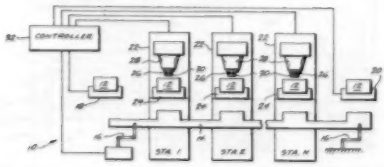
upon the occurrance of a financial transaction, allocating a number of information units, corresponding to the amount of the transaction, that are stored in the main memory to an accounting memory assigned to the creditor with whom the transaction is made; and

reading the contents of the accounting memories, via the terminal, and providing an indication of the creditors with whom transactions were carried out and the respective amounts of the transactions.

4,460,966
TRANSFER MACHINE CONTROL

Lawrence L. Chynoweth, Rochester, and Conrad J. Gordon, Mount Clemens, both of Mich., assignors to The Cross Company, Fraser, Mich.

Filed Nov. 27, 1981, Ser. No. 325,345
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—468 5 Claims



1. In a transfer machine which is disposed to load parts during a succession of part reception periods, wherein the transfer machine operates in alternating work unit and part transfer cycles to selectively machine loaded parts, and wherein different work units of the transfer machine require different operating times to complete their respective work tasks, apparatus responsive to loading of and failure to load parts for adjusting the length of a work unit cycle to the longest operating time of the work units at which parts are actually present during the work unit cycle, said apparatus comprising:

a shift register providing positions for storing discrete digital data bits, each of said bit storage positions uniquely corresponding to one of said work units and being arranged in a storage position sequence so that the bit storage position at a particular location in said storage position sequence corresponds to the work unit which is at the particular location in the work unit sequence of said transfer machine;

means for entering a digital bit of a first logic level into said shift register when a part is loaded into said transfer machine during one of said part reception periods, and for entering a digital bit of a second logic level into said shift register when a part is not loaded into said transfer machine during one of said part reception periods;

means for advancing each of the digital bits contained in said shift register by one bit storage position in said storage position sequence in response to a part transfer cycle, a transfer mechanism of said transfer machine advancing each of said loaded parts by one work unit in said work unit sequence during a part transfer cycle;

means responsive to the contents of said shift register after a given one of said part transfer cycles for activating given work units to perform their specified work tasks if a digital bit of a first logic level is contained in the bit storage positions corresponding to said given work units, and for preventing activation of said given work units of a digital bit of a second logic level is contained in the bit storage positions corresponding to said given work units;

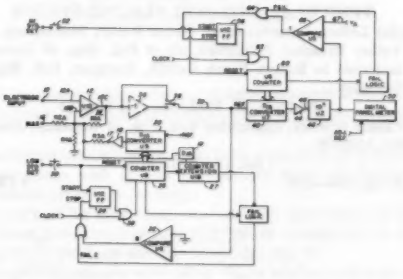
means responsive to operation of said activated work units for generating a signal at the completion of all of the work tasks of said activated work units; and

means responsive to said signal and to the contents of said shift register for commencing another one of said part transfer cycles upon the simultaneous occurrence of a first condition and a second condition, said first condition occurring when said signal is generated and said second condition occurring when each of the work units which is not activated after said given part transfer cycle corresponds to a bit storage position of said shift register which contains a digital bit of said second logic level.

4,460,967
ELECTRONIC CIRCUIT FOR MEASURING AND DISPLAYING ION CONCENTRATION IN FLUID

Irwin H. Krull, 2655 Keystone #9, Santa Clara, Calif. 95051, and James G. Tisue, 1074 Laureles, Los Altos, Calif. 94022

Filed Jul. 16, 1981, Ser. No. 283,955
Int. Cl.³ G01N *27/46*
U.S. Cl. 364—497 8 Claims



1. Electronic circuit for measuring and displaying ion concentration comprising;

an input terminal for receiving an electrical input signal from an electrode representative of ion concentration,

calibrating means including low standard circuit means for calibrating said electronic circuit with a low standard sample and including a low standard set switch adapted for initial operation by the operator, first digital storage

means responsive to said set switch for storing a signal value representative of offset correction to thus modify said input signal, and buffer means responsive to said offset correction signal and the electrode input signal for establishing a low standard signal, and

high standard circuit means for calibrating the electronic circuit with a high standard sample and including a high standard set switch adapted for operation by the operator, second digital storage means responsive to said high standard set switch for developing a signal representative of gain correction, and means receiving said low standard signal and responsive to the gain correction signal to modify said low standard signal from the buffer means to provide a normalized electrode signal, and

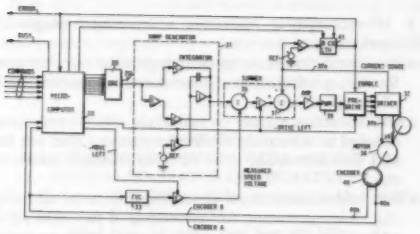
means responsive to said normalized electrode signal to provide an ion concentration reading from such electrode input signal and display said ion concentration.

4,460,968

PRINT HEAD MOTOR CONTROL WITH STOP DISTANCE COMPENSATION

Barry R. Cavill, and David F. Dodgen, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1981, Ser. No. 312,056
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—519 **5 Claims**



1. A control system for a printer having a bidirectional carriage carrying a print head,

said carriage being controllable to print at different speeds on different lines, said printer printing on a medium having a central print area and margin areas on each side of said print area, said system including:

means for generating a command instructing said carriage to stop as it approaches an edge of said print area,

means for measuring the distance traveled by said carriage after said stop command is issued for each line printed, and

means responsive to said measured distance for compensating for any variation of said measured distance from a desired value by issuing said stop command at a different time on the subsequent line of printing.

4,460,969

IMAGE SPECTRUM ANALYZER FOR CARTOGRAPHIC FEATURE EXTRACTION

Pi-Fuay Chen, Alexandria; Frederick W. Rohde, Fairfax Station, and William W. Seemuller, Springfield, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 4, 1980, Ser. No. 212,766
Int. Cl.³ G06G *9/00*; G06K *9/00*
U.S. Cl. 364—727 **39 Claims**

15. Apparatus which comprises:

a. an image

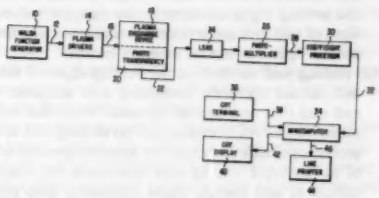
b. means for generating at least one two dimensional Walsh function light pattern and for illuminating said image with each said two dimensional Walsh function light pattern to produce a respective masked pattern;

c. means for receiving each said masked pattern and for producing an electrical signal in accordance with each said masked pattern; and

d. analog to digital converter means for receiving each said electrical signal and for providing a digital signal representative of each said electrical signal;

and

e. digital data processor means under stored program control for receiving each said electrical signal.



30. Method comprising the steps of:

a. providing an image;

b. generating a two dimensional Walsh function light pattern;

c. illuminating said image with said two dimensional Walsh function light pattern to produce a masked pattern; and

d. producing an electrical signal in accordance with said masked pattern, whereby said electrical signal is representative of the Walsh coefficient of said image.

4,460,970

DIGITAL DATA PROCESSING SYSTEM USING UNIQUE TECHNIQUES FOR HANDLING THE LEADING DIGITS AND THE SIGNS OF OPERANDS IN ARITHMETIC OPERATIONS

Elmer R. McClary, DeKalb, Ill., assignor to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,528
Int. Cl.³ G06F *7/52*
U.S. Cl. 364—761 **3 Claims**

1. In a digital computer system, arithmetic processor means for performing operations on at least signed integer operands comprising numeric values in the form of binary integer values, said arithmetic processor means comprising:

ALU means having a first input for receiving said operands and an output for providing results of ALU operations, said ALU means including

means connected to said first input and responsive to said received operands for performing arithmetic, logical, and shifting operations on said operands,

means responsive to said received operands for determining the numbers of leading digits containing zero numeric values in each of said operands, and

means responsive to said received operands for determining the signs of each of said operands;

memory means connected to said ALU means output for storing the results of said ALU operations;

selector means having a first input connected to an output of said memory means, and a second input connected to said

ALU means output, and a read output connected to a second input of said ALU means for selecting inputs to said second input of said ALU means; and,

means for controlling the operations of said arithmetic processor means;

said ALU means, said memory means, and said selector means responsive to said control means for performing said operations which operations comprise:

(1) receiving first and second operands into said ALU means, and (a) determining the numbers of the leading digits containing zero numeric values of said first and second operands, (b) determining the signs of said first and second operands, and (c) storing said numbers of the leading digits containing zero numeric values, said signs of said first and second operands, and said first and second operands in said memory means,

(2) reading said numbers of the leading digits of said first and second operands containing zero numeric values and said first and second operands from said memory means to said ALU means, and (a) shifting said first and second operands to reduce the required number of steps of an intended one of said operations by discarding certain of said leading digits containing zero numeric values, (b) performing said intended one of said operations on the remaining digits of said first and second operands to obtain an unsigned result, and (c) storing said unsigned result in said memory means,

(3) reading said signs of said first and second operands from said memory means to said ALU means and determining the sign of the result of said intended one of said operations, and

(4) providing said sign of said result and said unsigned result as the signed result of said intended one of said operations on said first and second operands.

4,460,971

TERMINAL APPARATUS USING REGISTER INFORMATION TO DETERMINE THE MEANING OF A BUFFER STORED FIELD DEFINING CHARACTER

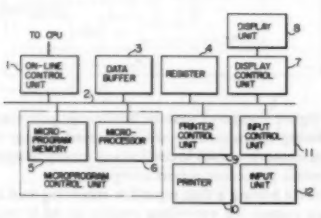
Kou Numata, and Nobutaka Nomura, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1981, Ser. No. 285,733

Claims priority, application Japan, Jul. 22, 1980, 55-100271

Int. Cl.³ G06F *3/14*

U.S. Cl. 364—900 **6 Claims**



1. A terminal apparatus for handling data by the field comprising a series of data, comprising:

first means for storing data including a field defining character located at a leading area of the field for defining the field;

second means for retaining information for determining the meaning of said field defining character; and

third means connected to said first and second means for determining the attribute of said field based on said information retained in said second means and said field defining character.

4,460,972

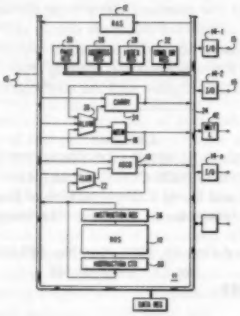
SINGLE CHIP MICROCOMPUTER SELECTIVELY OPERABLE IN RESPONSE TO INSTRUCTIONS STORED ON THE COMPUTER CHIP OR IN RESPONSE TO INSTRUCTIONS STORED EXTERNAL TO THE CHIP

Merle E. Homan, Los Gatos; Guenther K. Machol, Saratoga, and Larry M. Warren, San Martin, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 51,261, Jun. 22, 1979, abandoned. This application Jul. 30, 1981, Ser. No. 288,631

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—900 **8 Claims**



1. Microcomputing apparatus, comprising a single chip microprocessor;

a first instruction store on said single chip microprocessor for storing a first series of instructions to control operation of the apparatus;

a first instruction register on said single chip microprocessor coupled to selectively receive instructions read out from said first instruction store or from a second instruction store;

a first instruction address generating means on said single chip microprocessor for generating a first address for addressing said first instruction store to cause an instruction to be read out of said first instruction store;

a second instruction store external to said single chip microprocessor for storing a second series of instructions to control operation of the apparatus;

an external instruction counter external to said single chip microprocessor for generating a second address for addressing said second instruction store to cause an instruction to be read out of said second instruction store; and

instruction mode means responsive to a first signal on said single chip microprocessor, said first signal having a first state specifying internal mode and a second state specifying external mode, said instruction mode means including means responsive to a specified internal mode for loading into said first instruction register the instruction read from said first instruction store in response to said first address and responsive to a specified external mode for loading into said first instruction register the instruction read out from said second instruction store in response to said second address.

4,460,973

ELECTRONIC TRANSLATOR FOR MARKING WORDS OR SENTENCES

Akira Tanimoto, Kashihara, and Mitsuhiro Saiji, Kyoto, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 31, 1981, Ser. No. 298,114

Claims priority, application Japan, Sep. 3, 1980, 55-122706

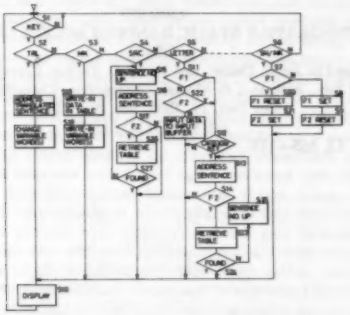
Int. Cl.³ G06F *15/38*

U.S. Cl. 364—900 **7 Claims**

1. An electronic translator of the type having an input device

for inputting words and directing output of words and a memory means from which a first word or words represented in a first language are retrieved in response to a second word or words represented in a second language equivalent to the first word or words, the first and second words being stored in the memory means, wherein the improvement comprises:

marking means responsive to the input device for marking at



least one selected data item of a plurality of data items as stored in the memory means each representing the second word or words to differentiate each selected data item from other data items in the second language stored in the memory means; and

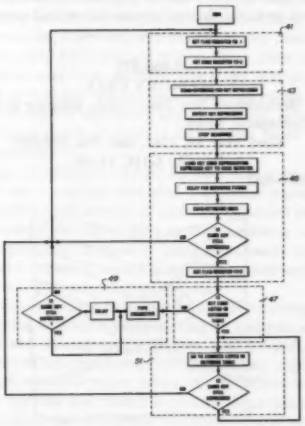
output means responsive to a command from the input device for selectively outputting only the at least one data item which is marked by the marking means.

4,460,974

ELECTRONIC COMPUTER WITH ACCESS TO KEYBOARD STATUS INFORMATION

Vincent C. Jones, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 27, 1981, Ser. No. 325,407
Int. Cl.³ G06F *15/12, 3/14*
U.S. Cl. 364—900 **3 Claims**



1. An electronic computer comprising: a keyboard having a plurality of keys;

interface means, coupled to the keyboard, for detecting a depressed key thereon, for generating in response thereto a key code associated with the depressed key, and for presenting the key code at an interface output during a time period in which the depressed key is depressed;

a memory having a plurality of memory locations, each memory location being uniquely identified by a memory address;

table means for storing a plurality of individual key codes and for storing a plurality of individual memory addresses, each individual key code being associated with one memory address;

program counter means, connected to the memory, for selecting an addressable memory location;

first logic means, connected to the interface means, the table means, and the program counter means, said first logic means being operative for receiving the key code from the interface output, for interrogating the table means and for thereby determining a first memory address associated with the key code, and for directing the program counter means to select a first memory location uniquely identified by the first memory address;

timing means, connected to the interface means and having a timing output, for making a measurement of the time period and for continuously presenting at the timing output a duration signal representative of said measurement; and

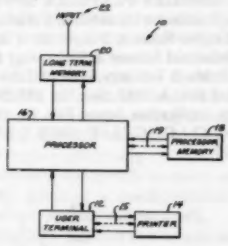
second logic means, connected to the program counter means and to the timing output, said second logic means being responsive to the duration signal and being operative for directing the program counter means to select a second memory location during a first portion of the time period and for directing the program counter means to select a third memory location during a second portion of the time period.

4,460,975

EASILY ACCESSIBLE FORMATING OF COMPUTER PRINTOUTS

John B. Torkelsen, Princeton, and Kevin M. Hoolihan, Plainsboro, both of N.J., assignors to Saga Data, Inc., Princeton, N.J.

Filed Sep. 17, 1982, Ser. No. 420,182
Int. Cl.³ G06F *3/12*
U.S. Cl. 364—900 **52 Claims**



1. A process for electronically generating a format for a computer printout according to commands of a user communicating with a processor, the processor having a memory and further communicating with a long-term memory, the long-term memory storing a set of generic default format commands, the process comprising the steps of:

(a) reproducing the default format commands in the processor memory;

(b) modifying the default format commands reproduced in the processor memory according to prompted user format commands to create a set of custom default format commands;

(c) recording data in the processor memory;

(d) converting the custom default format commands and data recorded in the processor memory into electrical

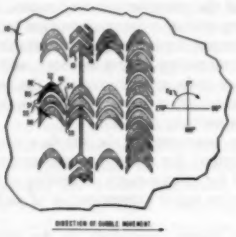
impulses to direct a printer to represent the data according to the format specified by the commands.

4,460,976

FIELD ACCESS MAGNETIC BUBBLE MEMORY WITH IMPROVED EXPANDER-DETECTOR ARRANGEMENT

Andrew H. Bobeck, Chatham, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 9, 1981, Ser. No. 319,610
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—8 3 Claims



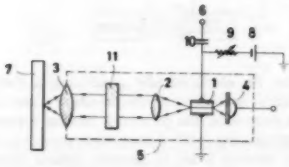
1. A magnetic bubble memory comprising a layer of magnetic material in which magnetic bubbles can be moved, a pattern of magnetic elements for moving magnetic bubbles along a multistage path therein in response to a magnetic field reorienting cyclically in the plane of said layer, said elements in each of a succession of said stages being arranged in a column along an axis transverse to said path, adjacent ones of said elements in each of said succession of stages being generally of a chevron-shaped configuration having arcuate larger upper and smaller lower perimeters and being separated from a like next adjacent element in a stage by a uniform spacing, the geometry of each of said generally chevron-shaped elements being such that the maximum magnetic path length in each of said elements remains essentially constant as an elongated bubble moves across the elements of a stage.

4,460,977

OPTICAL MEMORY PLAYBACK APPARATUS

Junichi Shimada; Yoshinobu Mitsuhashi; Keisuke Kikuchi, all of Ibaraki, and Kenjiro Sakurai, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Feb. 3, 1982, Ser. No. 345,391
Claims priority, application Japan, Feb. 12, 1981, 56-19516
Int. Cl.³ G11C *13/00*; G06K *7/10*
U.S. Cl. 365—106 7 Claims



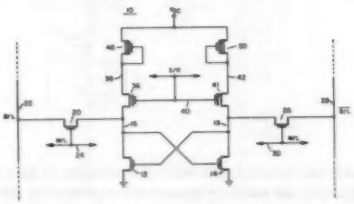
1. An optical memory playback apparatus, comprising a self-coupling semiconductor laser element, said laser element emitting a laser beam in a single longitudinal mode of emission, an optical system disposed on the output beam side of said semiconductor laser element, an information recording medium disposed at a focal point of said optical system, means for detecting the variation in the characteristic of said semiconductor laser element, and a spatially uneven phase plate interposed in said optical system, whereby reproduction of information from said information recording medium is effected by converting the single longitudinal mode of emission of the laser beam issued from the semiconductor laser element into a random multi-mode emission while the laser beam is on the way to the information recording medium and subsequently allowing the laser beam reflected by the information recording medium to return to the semiconductor laser element.

4,460,978

NONVOLATILE STATIC RANDOM ACCESS MEMORY CELL

Ching-Lin Jiang, Dallas, and David L. Taylor, Carrollton, both of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Nov. 19, 1981, Ser. No. 322,915
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—154 6 Claims



1. A nonvolatile static random access memory cell, comprising:

cross-coupled transistor means having first and second nodes which are maintained at complementary logic states;

first and second current limiting means each having a first terminal thereof connected to a first power terminal;

a first variable threshold transistor which forms the only single component connection between a second terminal of said first current limiting means and said first node, said first variable threshold transistor having a control terminal thereof connected to a control node; and

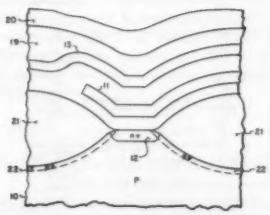
a second variable threshold transistor which forms the only single component connection between a second terminal of said second current limiting means and said second node, said second variable threshold transistor having a control terminal thereof connected to said control node.

4,460,979

MEMORY CELL

Dhaval J. Brahmbhatt, San Jose, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 19, 1982, Ser. No. 379,809
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—182 34 Claims



15. A non-volatile memory cell device, said device comprising:

a semiconductor body of a first conductivity type in at least a first portion thereof, except in selected regions in said

first body portion including first, second, third, fourth, fifth, sixth, seventh, eighth and ninth selected regions, said semiconductor material body having a first major surface wherein said first body portion intersects said major surface to form a first major surface portion;

a series combination of a select insulated gate field-effect transistor and of a memory insulated gate field-effect transistor each having a pair of terminating regions therein serving as a source and drain thereof and each having at least one gate region therein, said select insulated gate field-effect transistor first terminating region being said first selected region which intersects said first major surface portion and which is electrically connected to a first terminal means adapted for electrical connection to a first selection means, said select insulated gate field-effect transistor gate being electrically connected to a second terminal means adapted for electrical connection to a second selection means, said select insulated gate field-effect transistor second terminating region being said second selected region which intersects said first major surface portion, said memory insulated gate field-effect transistor first terminating region being said third selected region which intersects said first major surface portion and which is electrically connected to said select insulated gate field-effect transistor second terminating region, said memory insulated gate field-effect transistor gate being a first extended conductor electrically isolated, at least everywhere except at a first tunneling region thereof, from other conductive portions of said cell at sufficiently small voltages therebetween to prevent any significant electrical currents from traversing therebetween, and said memory insulated gate field-effect transistor second terminating region being said fourth selected region which intersects said first major surface portion and which is electrically connected to a third terminal means adapted for electrical connection to a third selection means;

a tunneling capacitance formed by said fifth selected region where said fifth selected region intersects said first major surface portion and by adjacent said tunneling region of said first extended conductor with said fifth selected region and said first extended conductor being separated by a first insulating layer sufficiently thin to permit significant electron tunneling currents to traverse between said fifth selected region and said first extended gate conductor at sufficiently large voltages but at voltages which are also sufficiently small so as to maintain that electrical isolation otherwise characterizing said first extended conductor as aforesaid, said fifth selected region being electrically isolated from said first, second, third and fourth selected regions to prevent any currents from traversing between said fifth selected region and any of said first, second, third or fourth selected regions at sufficiently small voltages therebetween;

a coupling capacitance formed by said first extended conductor and a second extended conductor paralleling at least a substantial portion of said first extended conductor and separated therefrom by a second insulating layer, said second extended conductor being electrically connected to a fourth terminal means adapted for electrical connection to a fourth selection means; and

a control insulated gate field-effect transistor having a pair of terminating regions therein serving as a source and drain thereof and having a gate therein, said control insulated gate field-effect transistor first terminating region being said sixth selected region which intersects said first major surface portion and which is electrically connected to a fifth terminal means adapted for electrical connection to a fifth selection means, said control insulated gate field-effect transistor gate being electrically connected to sixth terminal means adapted for electrical connection to a sixth selection means, and said control insulated gate field-effect transistor second terminating region being said seventh selected region which intersects said first major surface portion and which is electrically connected to said fifth selected region.

4,460,980

NONVOLATILE MNOS SEMICONDUCTOR MEMORY

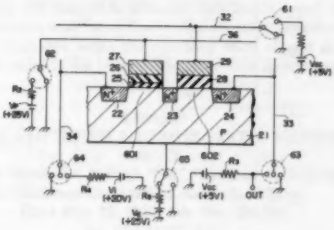
Takaaki Hagiwara, Kodaira; Yokichi Itoh, Hachioji; Ryuji Kondo, Kodaira; Yuji Yatsuda, Hachioji, and Shinichi Minami, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 949,244, Oct. 6, 1978, abandoned. This application Oct. 2, 1980, Ser. No. 193,124

Claims priority, application Japan, Oct. 17, 1977, 52-123479

Int. Cl.³ G11C *11/40;* **H01L** *29/78, 27/02, 29/34*

U.S. Cl. 365—184 **20 Claims**



1. A nonvolatile semiconductor memory comprising:

a semiconductor body of a first conductivity tube having a surface region,

memory cells arrayed in the form of a matrix in the surface region of said body, said each memory cell being comprised of:

(i) a metal-nitride-oxide-semiconductor transistor with a first channel provided in the surface region of said body, having a first impurity doped region of a second conductivity type opposite to said first conductivity type, and having a first insulated-gate electrode which is connected to a writing word line;

(ii) a metal-insulator-semiconductor transistor with a second channel provided in the surface region of said body, having a second impurity doped region of a second conductivity type, and having a second insulated-gate electrode which is disposed adjacently to the first insulated-gate electrode of said metal-nitride-oxide-semiconductor transistor and is connected to a reading word line, and

(iii) wherein said first and second channels are series connected and further comprising

means for addressing one specific memory cell of said memory cells by selecting a metal-insulator-semiconductor transistor of said specific memory cell,

separate writing lines for each row of said memory array to connect the first insulated-gate electrodes of the memory cells on the same row, and which function as separate row address lines in a writing mode,

separate word lines for each row of said memory array to connect the second insulated-gate electrodes of the memory cells on the same row, and which function as separate row lines,

means for selectively driving said separate writing lines in a writing mode,

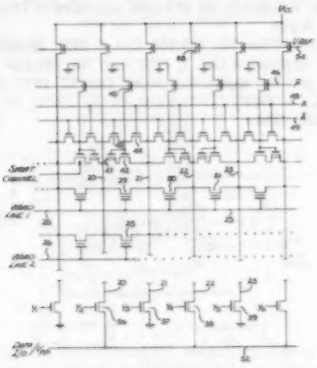
means for selectively driving said separate word lines in a reading mode and in said writing mode, and

means for applying in an erasing mode an erasing voltage V_E to said body while grounding said first and second insulated-gates of the memory cell and holding said first and second impurity doped regions of the memory cell in a floating condition.

4,460,981
VIRTUAL GROUND MEMORY

Michael A. Van Buskirk, San Jose, and Mark A. Holler, Milpitas, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 24, 1981, Ser. No. 334,304
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 **14 Claims**



1. An improved memory array employing virtual grounding, comprising:

a plurality of generally parallel, spaced-apart array lines;

a plurality of memory cells coupled between said array lines;

first switching means coupled between said array lines for selectively allowing current to flow in a first direction between each of said array lines;

second switching means coupled between said array lines for selectively allowing current to flow in a second direction, opposite to said first direction, between said array lines, and,

decoding means coupled to receive address signals and coupled to said first and second switching means for controlling said first and second switching means thereby allowing said current to flow in said first and second directions between said array lines,

whereby virtual grounding may be achieved with fewer parasitic paths.

4,460,982
INTELLIGENT ELECTRICALLY PROGRAMMABLE AND ELECTRICALLY ERASABLE ROM

Lubin Gee, Santa Clara; Pearl Cheng, Sunnyvale; Yogendra Bobra, Santa Clara, and Rustam Mehta, Sunnyvale, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 20, 1982, Ser. No. 380,149
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 **11 Claims**

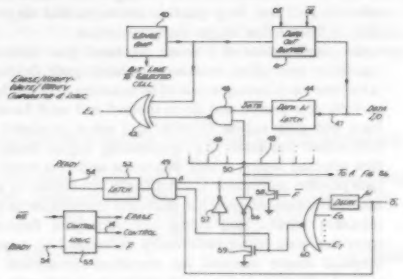
1. In an electrically programmable and electrically erasable memory fabricated on a substrate employing a plurality of memory cells which require a first potential for reading data and a second higher potential for programming data, an improvement on said substrate comprising:

latching means for receiving and temporarily storing data;

pulse generation means for generating pulses used to program said cells with said data, said generation means coupled to receive said second potential;

comparator means for comparing data in said latching means with data in said cells; and,

control means for controlling said pulse generation means, such that said pulses are repeatedly generated until data in said latching means matches data in said cells, said control means being coupled to said comparator means and said pulse generation means;

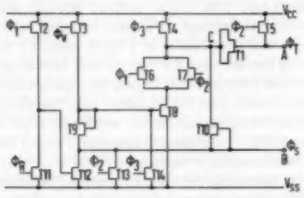


whereby programming pulses are repeatedly generated until said data is programmed into said cells.

4,460,983
INTEGRATED DYNAMIC READ-WRITE MEMORY

Ewald Michael, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,527
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207498
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—189 **19 Claims**



1. Integrated read-write memory having memory cells formed as single-transistor memory cells and disposed along rows and columns of a matrix on a semiconductor chip containing the memory, each matrix column having assigned thereto a respective comparator and at least one comparison cell, respectively, having a construction corresponding to that of the memory cells and, together with corresponding comparison cells of the remaining matrix columns, forming an additional matrix row, addressing by the columns being effected via a respective bit line combining the memory cells of the individual columns together with the corresponding comparison cell, and addressing by the row being effected via a respective word line combining the single-transistor memory cells belonging to the respective matrix row, the comparator having a voltage drive provided, on one hand, by signals fed to the corresponding bit line and, on the other hand, by a clocked connection between a supply potential and a terminal of the comparator to which the supply potential is applicable, comprising a respective clocked transfer transistor forming a connection between two signal terminals of the comparator and the single-transistor memory cells and the comparison cells, respectively, controlling said signal terminals; a circuit part for generating a clock signal acting jointly on respective gates of the respective transfer transistors, said circuit part being controllable in turn by a clock signal timing the connection between the supply potential and the corresponding supply terminal of the comparator; said circuit part being of such construction that, due to the individual clock signal furnished

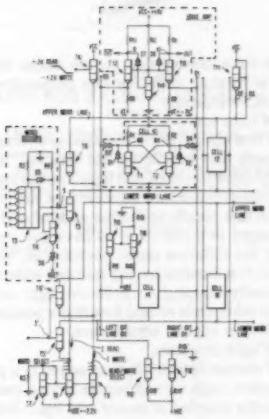
thereby, said transfer transistors are in a heavily conducting state prior to connection of the comparator to the supply potential and are then switched over and cut off, respectively, simultaneously with activation of the comparator to a state with a higher resistivity than in the heavily conducting state, and then, immediately at the end of the negative edge of the clock signal applying the supply potential to the supply terminal of the comparator, the highly conducting state of said transfer transistors is restored.

4,460,984

MEMORY ARRAY WITH SWITCHABLE UPPER AND LOWER WORD LINES

Ronald W. Knepper, Lagrangeville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1981, Ser. No. 336,004
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—190 **2 Claims**



1. A random access memory array having a plurality of memory cells, each said memory cell consisting of first and second cross coupled transistors, first and second clamping diodes connected between the collector and base regions of each of the first and second transistors, first and second storage nodes, a first load resistor connected to the first storage node, a second load resistor connected to the second storage node, the other ends of each of the load resistors being connected in common and to an upper word line, the emitters of said first and second transistors being connected in common and to a lower word line, a first Schottky barrier diode input/output device connecting the first storage node to a first bit line, a second Schottky barrier diode forming a second input/output device connecting the second storage node to a second bit line, the improvement comprising:

a third transistor having collector, base and emitter regions and having its collector region conductively connected to said upper word line and arranged to receive a decode signal at its base region;

a fourth transistor having collector, base and emitter regions and having its emitter region coupled to the emitter region of said third transistor to form a current switch therewith and arranged to recieve a control signal at its base region;

a fifth transistor having collector, base and emitter regions with its collector region connected to said lower word line and its base region arranged to receive a decode signal, and sixth, seventh and eighth transistors each having collector base and emitter regions, the emitter regions of each of said sixth, seventh and eighth transistors being connected to a common potential source, the base regions of each of said sixth, seventh and eighth transistors being commonly connected together and the collector region of said eighth transistor connected both to its base region and ground through resistor means, the collector region of said seventh transistor being connected to the emitter region of said fifth transistor and the collector region of said sixth transistor being connected to said emitter regions of said third and fourth transistors,

said collector regions of said sixth and seventh transistors providing the same constant current to the said emitter regions of said third, fourth and fifth transistors,

said fifth transistor upon receiving said decode signal at its base region to render said fifth transistor conductive acts to alter the potential level on said lower word line in accordance with current switched therethrough from said seventh transistor, and

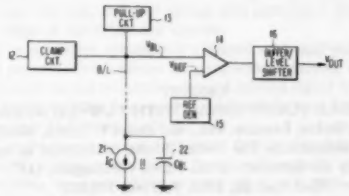
said third transistor upon receiving said decoder signal at its base region to render said third transistor conductive acts to alter the potential level on said upper word line in accordance with current switched therethrough from said sixth transistor when the potential level of said decoder signal exceeds the potential level of said control signal.

4,460,985

SENSE AMPLIFIER FOR MOS STATIC MEMORY ARRAY

Charles R. Hoffman, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,504
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—207 **13 Claims**



1. A sense amplifier circuit comprising: means for generating a variable reference voltage that tracks a variable power supply voltage by a first predetermined voltage difference from said power supply voltage;

differential amplifier means having a first input coupled to a memory cell line and a second input coupled to receive said reference voltage; and

voltage clamping circuit means coupled to said memory cell line for restricting negative voltage excursions on said memory cell line to lie within a second predetermined voltage difference below said reference voltage.

4,460,986

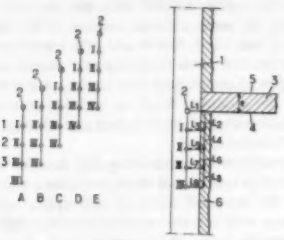
METHOD OF SEISMIC EXPLORATION USING ACOUSTIC DIAGRAPHY

Jean Millouet, La Celle Saint Cloud, and Philippe Staron, Mennecy, both of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Continuation of Ser. No. 56,182, Jul. 10, 1979, abandoned. This application Aug. 26, 1981, Ser. No. 296,532
Claims priority, application France, Jul. 18, 1978, 78 21226
Int. Cl.³ G01V *1/40, 1/36*
U.S. Cl. 367—27 **5 Claims**

1. An acoustic well logging method comprising the steps of transmitting acoustic waves from a transmitter to at least three receivers over at least three acoustic paths of different lengths, recording all of the signals received by the receivers from each transmission, logging on each recording the respective positions of the transmitter and receivers at the moment of trans-

mission corresponding to said each recording, grouping the recordings in pairs such that said pairs have path segments facing the same geological layer of interest, the acoustic paths corresponding to the recordings of each pair having a common path segment and part not in common facing said geological



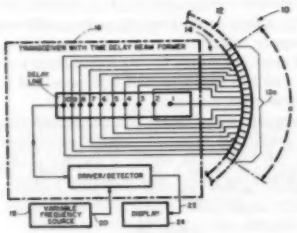
layer of interest, determining for each type of wave of interest the difference between the arrival times of said wave of interest on the recordings of each pair by cross correlating the recorded signals of each pair of recordings, and summing the cross correlation functions for each geological layer.

4,460,987

VARIABLE FOCUS SONAR WITH CURVED ARRAY

Robert H. Stokes, Leander, Tex., and James F. Lynch, Mashpee, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 22, 1982, Ser. No. 370,883
Int. Cl.³ G01S 7/52
U.S. Cl. 367—103 **5 Claims**



1. A variable focus sonar system comprising:

a convexly curved array of electroacoustic transducer elements;

time delay beamforming means, connected to said array, for effecting predetermined delays in individual electrical signals having a selected operating frequency f_o within a range of operating frequencies and corresponding to predetermined ones of said transducer elements so that said array is characterized by a corresponding focal length;

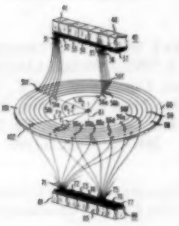
selectively variable frequency means, coupled to said time delay beamforming means, and operative to change said selected operating frequency to a different operating frequency f_o whereby said array is characterized by a corresponding different focal length.

4,460,988

DATA ACCESSING SYSTEM FOR OPTICAL DISK MASS MEMORY

Eugene I. Gordon, Convent, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 20, 1980, Ser. No. 199,022
Int. Cl.³ G11B 7/12, 25/04
U.S. Cl. 369—32 **2 Claims**



1. Apparatus for accessing data on the tracks of an optical disk, while it is rotating about an axis perpendicular to the plane of the disk, comprising

a plurality of light sources,

a plurality of first optical fibers arranged in a plurality of first bundles, each first bundle having one end of its fibers optically coupled to one of said light sources and the other ends of its fibers positioned adjacent one side of said disk, within each first bundle said other ends of said first fibers being arranged in a line so as to have the same angular coordinate but different radial coordinates, but different ones of said first bundles having said one ends of said first fibers optically coupled to different light sources and having said other ends of said first fibers positioned along lines at different angular coordinates,

a plurality of light detectors,

a plurality of second optical fibers arranged in a plurality of second bundles, each second bundle having one end of its fibers optically coupled to one of said light detectors and the other ends its fibers positioned adjacent the opposite side of said disk, within each second bundle said other ends of said second fibers being arranged along one of said tracks so as to have the same radial coordinate but different angular coordinates, but different ones of said second bundles having said one ends of said second fibers optically coupled to different light detectors and having said other ends of said second fibers positioned along tracks at different radial coordinates, and

means for activating a preselected source so as to cause light to pass through one of said first bundles to points on said disk along a line a predetermined angle θ, and means for activating a preselected detector which is optically coupled through one of said second bundles to points along one of said tracks at a predetermined radius r, thereby to read data on said disk at the location given by the polar coordinates (r, θ).

4,460,989

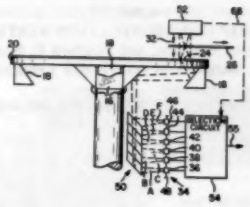
APPARATUS FOR IMPROVING FOCUS DURING PLAYBACK OF AN OPTICAL DATA RECORD

James T. Russell, Salt Lake City, Utah, assignor to Eli Soloman Jacobs, New York, N.Y.

Filed Jun. 22, 1981, Ser. No. 275,717
Int. Cl.³ G11B 7/00
U.S. Cl. 369—45 **35 Claims**

1. A focusing apparatus for focusing light from a playback light source on a digital optical data record, the data record containing at least one layer of recorded data, said focusing apparatus comprising means for providing plural simultaneous focal paths of different lengths intersecting the layer of recorded data and also including circuit means for selecting a

playback focal path from said focal paths and for shifting the playback focal path from one of said focal paths to another



such that light from the playback light source which is traveling along the playback focal path is substantially focused on the recorded data.

4,460,990

APPARATUS FOR READING AN OPTICAL RECORD CARRIER

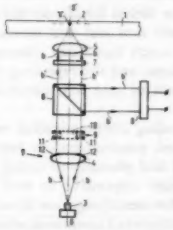
Willem G. Opheij, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 18, 1982, Ser. No. 339,934

Claims priority, application Netherlands, Nov. 2, 1981, 8104946

Int. Cl.³ G11B 7/12

U.S. Cl. 369—112 **4 Claims**



1. An apparatus for reading information from a record carrier having an information structure comprising a plurality of generally parallel information tracks, said apparatus comprising means for producing a beam of radiation, an optical system for projecting said beam onto said record carrier, said optical system including means for focusing said beam to a circular spot on an information track to be read so as to modulate the radiation of said beam in accordance with information stored in said track, and a radiation-sensitive detector disposed in the path of the modulated radiation, said optical system further including a substantially rotationally symmetrical radiation attenuating element arranged in the radiation path at a location which is traversed only by radiation which is traveling towards said record carrier, said attenuating element comprising a central portion and an annular peripheral portion such that there is an abrupt transition between said central and peripheral portions, said central portion transmitting the central portion of said beam substantially unattenuated and said peripheral portion providing substantial attenuation of the amplitude of the peripheral portion of said beam so as to reduce cross-talk due to assymmetry in the intensity distribution of the radiation incident on said information structure when said beam is not perpendicular to the surface of said record carrier.

4,460,991

PICKUP DEVICE FOR DISC PLAYER

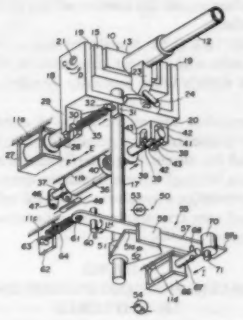
Hideo Omoto, Hamamatsu, Japan, assignor to Nippon Gakki Kabushiki Kaisha, Japan

Filed May 19, 1982, Ser. No. 379,957

Claims priority, application Japan, May 28, 1981, 56-78006[U]; May 28, 1981, 56-78007[U]

Int. Cl.³ G11B 3/10

U.S. Cl. 369—230 **8 Claims**



1. A pickup device for a disc player comprising:

(a) a pickup arm pivotally mounted at one end thereof for movement between upper and lower positions, said pickup arm being horizontally angularly movable about said one end, and said pickup arm carrying a pickup cartridge at the other end thereof;

(b) an arm lifter operatively engaged with said pickup arm;

(c) control circuit means for producing a driving signal;

(d) drive means responsive to said driving signal for driving said arm lifter for moving said pickup arm between its upper and lower positions; and

(e) brake means responsive to said driving signal for holding said pickup arm against horizontal angular movement during its vertical movement when said driving signal derived from said control circuit means and to said brake means, application of said driving signal to said drive means and to said brake means start at the same time.

4,460,992

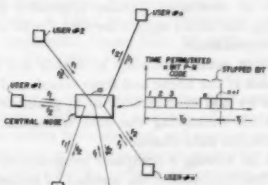
ORTHOGONAL CDMA SYSTEM UTILIZING DIRECT SEQUENCE PSEUDO NOISE CODES

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 4, 1982, Ser. No. 439,233

Int. Cl.³ H04J 13/00

U.S. Cl. 370—19 **7 Claims**



1. An orthogonal code division multiple access communication system comprising:

a plurality of user communications apparatus, each having transmitter and receiver means;

each said transmitter means including:

a code generator means for generating a different time permutation of the same n-bit, direct-sequence, noise coded signal and wherein each said bit assumes either one of two possible digital values

a bit stuffer means for adding, at the same location in each of said coded signals, a common bit to balance the values of said bits in said signal and thereby form an (n+1)-bit noise coded signal and wherein the number of bits of one of said digital values equals the number of bits of the other of said digital values;

each of said (n+1)-bit signals having a crosscorrelation value of zero with a linear composite of the other of said (n+1)-bit signals when mutually synchronous with each other;

each said receiver means including a coherent detection means for autocorrelation detecting one of said (n+1)-bit signals and for eliminating interfernece from the other of said signals through crosscorrelation detection; and

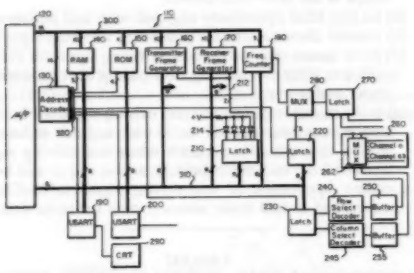
means for providing a synchronous timed reference for said plurality of user communication apparatus.

4,460,993

AUTOMATIC FRAMING IN TIME DIVISION MULTIPLEXER

Dean A. Hampton, Watertown, and David A. Lambert, New Fairfield, both of Conn., assignors to General DataComm Industries Inc., Danbury, Conn.

Filed Jan. 12, 1981, Ser. No. 224,339
Int. Cl.³ H04J *3/16*
U.S. Cl. 370—84 **15 Claims**



1. In a bit-interleaved time division multiplexer for multiplexing data and control signals from a plurality of individual data channels so as to produce a single stream of signals on an aggregate transmission line, said multiplexer including a frame generator which generates select signals that are used to select for transmission in a frame either data from individual data channels or overhead signals, apparatus for automatically generating the select signals for said frame comprising:

a microprocessor,

a random access memory in which are stored the select signals of the frame and from which said select signals are read by said microprocessor to generate the frame,

means for measuring the data transmission rates of each individual data channel,

means for storing a computer program for calculating with the microprocessor the number of frames transmitted per unit time and the distribution of the select signals in the frame in accordance with the data transmission rates of the individual data channels and the aggregate transmission line,

means for storing in said random access memory the select signals of the frame in accordance with the distribution calculated by said microprocessor, and

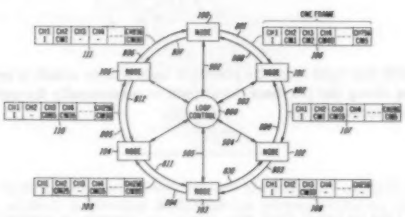
means for reading out of said random access memory the select signals stored therein in order to generate said frame.

4,460,994

LOOP COMMUNICATION SYSTEM

John M. Scanlon, Wheaton, and Matthew F. Slana, Naperville, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 5, 1981, Ser. No. 308,443
Int. Cl.³ H04J *3/02*
U.S. Cl. 370—88 **14 Claims**



8. A bidirectional loop transmission system comprising:

a bidirectional time-multiplexed communication loop for conveying data words in a predetermined number of channels in a first direction and for conveying data words in said predetermined number of channels in a second direction, said second direction being the opposite of said first direction;

a plurality of nodes connected to said loop and comprising a communication means for transmitting data words in said channels of said first and said second directions, for receiving data words from said channels of said first and second directions, and for repeating data words received in said channels of said first direction and said second direction;

means for generating communication request signals defining a requested communication between a first and a second one of said plurality of nodes; and

first control means responsive to said communication request signals for identifying one direction of said bidirectional time-multiplexed communication loop as a direction having the minimum number of intermediate nodes between said first and said second node and for controlling the communication means of said first node to transmit data words of said requested communication in channels of said direction of said loop having the minimum number of intermediate nodes and to receive data words of said requested communication of said loop from channels of the other direction of said loop and for controlling the communication means of said second node to transmit data words of said requested communication in said channels of said other direction of said loop and to receive data words of said requested communication from channels of said direction of said loop having the minimum number of intermediate nodes.

4,460,995

NARROW FOCUS COMPENSATING TRANSDUCER FOR SURFACE ACOUSTIC WAVE FILTER

Adrian J. DeVries, Mount Prospect, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 21, 1982, Ser. No. 370,313
Int. Cl.³ H03H *9/64*
U.S. Cl. 310—313 R **24 Claims**

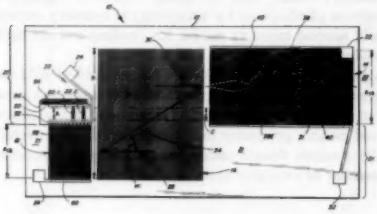
1. A surface acoustic wave filter comprising:

transducer means for receiving an electrical input signal and sending a surface acoustic wave signal;

apodized transducer means acoustically coupled to said

sending transducer means for receiving said surface acoustic wave signal and producing an electrical output signal, said apodized receiving transducer having a selected surface acoustic wave aperture;

and compensating transducer means for receiving said elec-



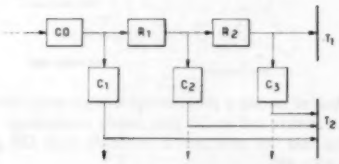
trical input signal and sending a diffraction-compensating surface acoustic wave signal, said compensating transducer means being acoustically coupled to send said compensating signal to said apodized receiving transducer means and having an aperture substantially smaller than said selected aperture thereof.

4,460,996

PROCESS AND APPARATUS FOR ERROR DETECTION

Rémy D. Fourre, Les Ulis, and Bruno de Langre, Paris, both of France, assignors to Societe d'Etudes et Conseills A E R O(Automation-Electronique-Recherche/Operationnelle, France

Filed Sep. 23, 1981, Ser. No. 304,915
Claims priority, application France, Oct. 15, 1980, 80 22040
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—6 **7 Claims**



1. An apparatus for the prevention of the propagation of errors in a security processor of the type having processing circuits for performing arithmetic and logic operations on given operands and means for detecting single definite breakdown errors occurring as the result of breakdowns in the processing circuits, these processing circuits including a single upstream processing circuit that produces signals which are distributed in parallel to a plurality of downstream processing circuits, the combination comprising:

a plurality of signal interpreting circuit means, each for receiving an ambiguous, weakened signal and producing a signal having a definite, unambiguous output; and

circuit means for interconnecting said plurality of signal interpreting circuit means in series relationship with each other, and with the upstream processing circuit, with the input to at least one of said downstream processing circuits being connected between two successive signal interpreting circuit means,

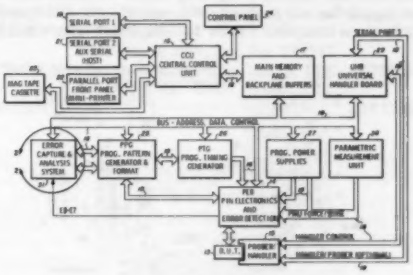
said means for detecting being connected to said downstream processing circuits to detect a single definite breakdown in said downstream processing circuits and to the last of the series of signal interpreting circuit means to detect a single definite breakdown from any of said signal interpreting circuit means of the series.

4,460,997

MEMORY TESTER HAVING MEMORY REPAIR ANALYSIS CAPABILITY

Timothy Harns, Freemont, Calif., assignor to Pacific Western Systems Inc., Mountain View, Calif.

Filed Jul. 15, 1981, Ser. No. 283,366
Int. Cl.³ G06F *11/20*
U.S. Cl. 371—10 **7 Claims**


CONTROL PANEL
SERIAL PORT 1
SERIAL PORT 2 AUX SERIAL (HOST)
CCU CENTRAL CONTROL UNIT
MAIN MEMORY AND BACKPLANE BUFFERS
UMB UNIVERSAL HANDLER BOARD
SERIAL PORT 3
MAG TAPE CASSETTE
PARALLEL PORT FRONT PANEL (DIAG-PRINTER)
BUS - ADDRESS, DATA, CONTROL
ERROR CAPTURE & ANALYSIS SYSTEM
PPG PROG. PATTERN GENERATOR & FORMAT
PTG PROG. TIMING GENERATOR
PROG. POWER SUPPLIES
PARAMETRIC MEASUREMENT UNIT
PES PIN ELECTRONICS AND ERROR DETECTION
PROBER HANDLER

4. In a memory tester for testing and analyzing the failures in a memory under test to determine repairability, said memory having a matrix of row and column memory elements and spare rows and columns of memory elements;

testing means for testing the memory matrix to derive failure test data representative of the row and column locations in the memory matrix of faulty individual memory elements;

second memory means for receiving from said testing means and for storing the failure test data with the same row and column correspondence with that of the memory elements in the memory under test;

accessing means for accessing the test result data stored in said second memory row-by-row and for determining faulty memory elements per row in the memory under test;

counting means for counting the number of failures per row;

flagging means for flagging a row for replacement when the number of detected failures in the accessed row exceeds a certain number;

accessing means for accessing the test result data stored in said second memory column-by-column and for detecting faulty memory elements per column in the memory under test; and

masking means responsive to the output of said flagging means for masking the counting of memory element failures in flagged rows.

4,460,998

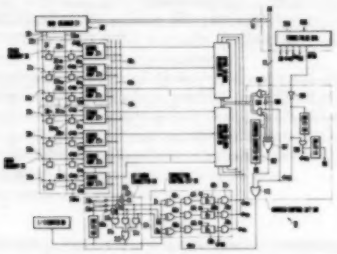
SEMICONDUCTOR MEMORY DEVICES

Junzo Yamada, Iruma; Tsuneo Mano, Kodaira, and Junichi Inoue, Chofu, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 356,041
Claims priority, application Japan, Mar. 11, 1981, 56-34799
Int. Cl.³ G06F *11/10, 11/00*
U.S. Cl. 371—10 **7 Claims**

1. In a semiconductor memory device of the type comprising a main memory device including a plurality of memory cells connected to cross points between first and second groups of lines which are arranged in a matrix circuit, means for reading out data stored in said memory cells in accordance with address designation signals and means for correcting an error contained in the read out data, the improvement which comprises a spare memory device in which one of said groups of the lines and another group of lines are arranged in another matrix circuit and said memory cells are connected to cross points of said another matrix circuit, and correction control circuit including a plurality of registers which store information regarding presence or absence of an error when the error

is contained in said read out data, means for producing a correction signal based on output signals of said registers, said data reading out means including transfer switch means responsive to said correction signal for substituting one of said groups of lines of said main memory device from which an error has been detected by a selected one of the lines of said another group of said spare memory device wherein said first group of lines comprises bit lines and said second group of lines comprises word lines, and further comprising means for producing address signals for said memory cells, and wherein said transfer switch means comprises a main decoder which selects said bit



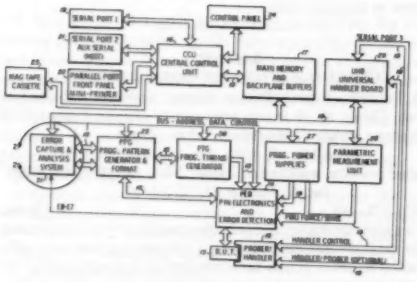
lines of said main memory device following said address signals, and a spare decoder for selecting said bit lines of said spare memory device in accordance with said address signals, said main decoder including means for interrupting said bit lines of said main memory device on which an error has occurred from its output side when said correction signal is applied to said main decoder, and said spare decoder including transfer means for substituting said bit lines of said main memory device interrupted from said output side with selected bit lines of said spare memory device such that said selected bit lines will have the same addresses as those of corresponding bit lines of said main memory device.

4,460,999

MEMORY TESTER HAVING MEMORY REPAIR ANALYSIS UNDER PATTERN GENERATOR CONTROL

John D. Schmidt, Palo Alto, Calif., assignor to Pacific Western Systems, Inc., Mountain View, Calif.

Filed Jul. 15, 1981, Ser. No. 283,654
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—21 **7 Claims**



1. In a memory tester for testing and analyzing for the repairability of a memory device under test having a matrix of memory elements and spare rows and/or spare columns of memory elements which may be used for repair:

pattern generator means for generating a pattern of addresses for accessing the memory elements within the memory device under test;

testing means under control of said pattern generator means for testing for and detecting failures of the memory elements within the memory device under test as accessed by said pattern generator means;

second memory means having a matrix of memory elements therein for storing the results of the failure test;

said pattern generator means interacting with said second memory means and including means for generating a pattern of addresses for accessing the memory elements of said second memory means for reading out the test data stored therein; and

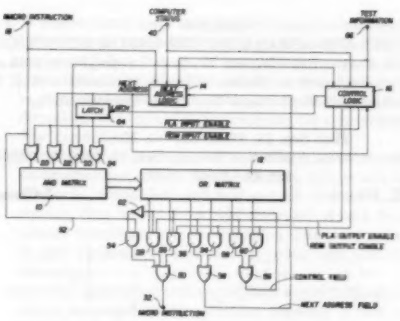
analyzing means directly under the control of said pattern generator means and responsive to the test result data read out of said second memory means under the control of said pattern generator for determining the repairability of the memory device under test by taking into account the number of available spare memory elements.

4,461,000

ROM/PLA STRUCTURE AND METHOD OF TESTING

William R. Young, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Mar. 1, 1982, Ser. No. 353,604
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—21 **32 Claims**



1. A method of testing a programmable-logic-array having an AND gate matrix and an OR gate matrix comprising:

first testing said OR gate matrix to verify each OR gate individually; and

second testing said AND gate matrix by individually addressing all of the AND gates and monitoring the output of said OR gate matrix.

4,461,001

DETERMINISTIC PERMUTATION ALGORITHM

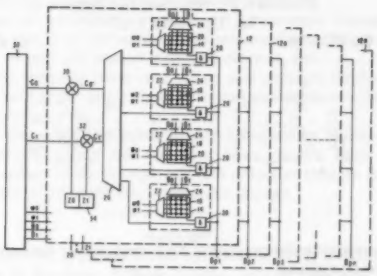
Douglas C. Bossen, and Mu-Yue Hsiao, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,925
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—38 **9 Claims**

1. In a memory system with data bits or storage locations arranged in logical data words made up of storage locations in a plurality of bit positions accessed by different decoder means that are all addressed by the same set of location address bits for a logical data word through different permuting means that converts the logical address bits to a set of physical address bits of an actual storage location accessed by each decoder as a function of permutation data bits supplied to the particular permuting means for the purpose of giving faulty storage locations at the same actual storage location in different bit positions different logical addresses so as to eliminate error conditions that are uncorrectable by the error correcting code protecting the memory system, the improvement comprising:

error detection means for determining the location of faulty data bits in the memory;

storage means for storing the address bit locations of known faulty data bits of the memory, and



means responsive to the data stored in the storage means for selecting the permutation bits and accessing any bit position of the memory on the basis of known logical addresses of any faulty data bits in other bit positions and the physical address of any faulty data bits in said any position.

4,461,002

DIGITAL SIGNAL RECEIVER

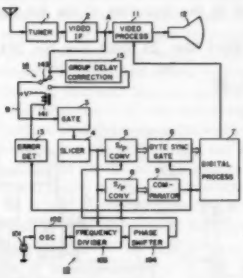
Hideaki Nanko, Nishinomiya, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jan. 19, 1982, Ser. No. 340,829

Claims priority, application Japan, Apr. 7, 1981, 56-52591; Jun. 16, 1981, 56-93259

Int. Cl.³ H03D *3/24*

U.S. Cl. 371—47 **11 Claims**



1. A digital signal receiver for receiving a digital signal being transmitted, said digital signal including a data signal of a bit serial fashion including data, and a specified code signal preceding said data signal, comprising:

demodulating means for receiving and demodulating said digital signal,

sampling clock generating means for generating a sampling clock signal for use in sampling said demodulated digital signal,

sampling means responsive to the output of said sampling clock generating means for reproducing said data signal by sampling said demodulated digital signal,

error detecting means responsive to said demodulated digital signal for detecting an error in bit phase of said demodulated digital signal caused by a group delay characteristic of a transmission path between transmission and demodulation with respect to detection of said specified code signal as demodulated, and

digital signal phase shifting means coupled between said demodulating means and said sampling means for shifting the phase of said demodulated digital signal, said shifting means responsive to the error detection output of said error detecting means for correcting said bit phase error.

4,461,003

CIRCUIT ARRANGEMENT FOR PREVENTING A MICROCOMPUTER FROM MALFUNCTIONING

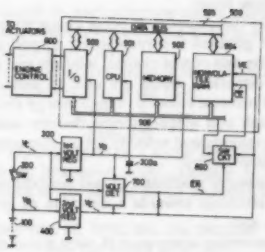
Kazuyoshi Tamaki, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 3, 1981, Ser. No. 270,212

Claims priority, application Japan, Jun. 4, 1980, 55-75883

Int. Cl.³ G06F *11/00*

U.S. Cl. 371—66 **14 Claims**



1. A circuit arrangement for preventing a microcomputer from malfunctioning, said microcomputer having at least a central processing unit, a random access memory and a control bus through which control signals including read and write instruction signals are fed from said central processing unit to said random access memory, said central processing unit being arranged to receive electrical power via a switch from a battery installed on a vehicle, said random access memory being arranged to always receive electrical power from said battery, said random access memory having a chip-select terminal for receiving a stand-by signal for prohibiting reading and writing operations thereof, said circuit arrangement comprising:

first means for monitoring the voltage of said battery and producing an output signal when the voltage of said battery is below a predetermined value; and

second means responsive to said output signal from said first means and to one of said control signals other than said write instruction signal, which control signal is fed via said control bus thereto, for producing said stand-by signal with which said random access memory will be put in stand-by condition in which reading and writing operations of said random access memory are prohibited, said second means producing said stand-by signal substantially simultaneously with said one of said control signals other than said write instruction signal, which control signal is arranged to exist when said write instruction signal is absent, said stand-by signal being continued as long as the battery voltage is below said predetermined value.

4,461,004

EXCITATION CANCELLING FREE ELECTRON LASER

John M. J. Madey, 2120 Amherst St., Palo Alto, Calif. 94087

Continuation-in-part of Ser. No. 279,122, Jun. 30, 1981. This application Jul. 18, 1983, Ser. No. 515,081

Int. Cl.³ H01S *3/00*

U.S. Cl. 372—2 **5 Claims**

1. In a gain-expanded free electron laser including

means for providing an evacuated channel having a longitudinal axis,

means for injecting a relativistic electron beam character-

ized by a design energy $\gamma_0 mc^2$ into said channel in a direction generally parallel to the axis of said channel,

means for supporting an electromagnetic wave in at least a region of said channel, which electromagnetic wave is characterized by an optical axis generally parallel to the axis of said channel, and by an optical phase,

means for dispersing the electrons in transverse position at the entrance to said channel in proportion to said electrons' deviations in energy from said design energy,

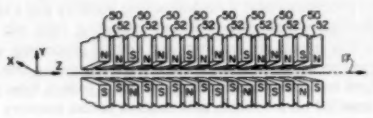
magnet means for generating a magnetic field perpendicular to the axis of said channel, said magnetic field having

a periodic component B_0 which reverses periodically along said axis, though remaining constant in time, said periodic component being used to impart a periodic transverse motion and velocity to said electrons in said electron beam,

said periodic component being characterized by a transverse gradient k perpendicular to said magnetic field and the axis of said channel wherein said gradient k and said dispersing means are used to selectively increase the transverse velocity of high energy electrons moving through said magnet means thereby maintaining constant longitudinal velocity for all electrons independent of initial energy,

said transverse gradient k in said periodic field deflecting said electrons towards a direction of lower magnetic field, and

a non-reversing component B_c with transverse gradient s, said non-reversing component opposing the deflection of said electron beam by said periodic component, said



gradient s preserving the dispersion in energy and transverse position established at the start of said magnet means,

said evacuated channel, said supporting means, and said magnet means defining an interaction region of length L in which said electromagnetic wave exchanges energy with said electron beam,

said magnet means, said electromagnetic wave, and said electron beam being characterized by a net optical phase slip qL during the interaction between the phase of said electromagnetic wave and the phase of said electron transverse velocity, and a spatial frequency Λ for free betatron oscillations about the electrons' nominal trajectories, thereby defining a net betatron phase advance ΛL,

wherein said net optical phase slip qL and said betatron phase advance Λ satisfy the following conditions:

$$|qL| = K\pi$$

$$|qL - \Lambda L| = M2\pi$$

where K is an integer and M is any positive integer,

whereupon the excitation of the betatron motion excited during the passage of said electrons through said interaction region is suppressed,

the improvement wherein:

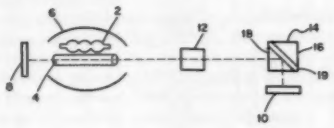
said optical axis is displaced transversely relative to the axis of said electron beam to create a transverse gradient in the optical electric field in the region through which said electron beam passes, thereby enhancing the small signal gain.

4,461,005

HIGH PEAK POWER, HIGH PRF LASER SYSTEM

Ernest M. Ward, 6308 Jebel, El Paso, Tex. 79912; Eugene L. Curry, 5 Otranto Club, Hannahan, S.C. 29410, and Richard J. Newton, Rte. 2, Box 341 K, Las Cruces, N. Mex. 88001

Filed Oct. 27, 1980, Ser. No. 200,664
Int. Cl.³ H01S 3/00
U.S. Cl. 372—10 11 Claims



6. Apparatus for producing high peak power narrow laser pulses, comprising,

a laser medium,

means for exciting the laser medium to emit a laser wave,

means facilitating oscillation of the entire laser wave through said medium,

shutter means for preventing said oscillation when said shutter means is in a closed condition preventing passage of said wave therethrough, and for permitting said oscillation when in an open condition allowing passage of said wave therethrough, and

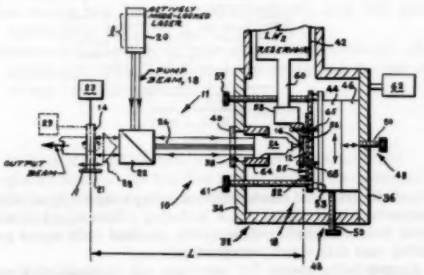
means for rapidly terminating said oscillation and for emitting a narrow width, high power pulse from said apparatus.

4,461,006

SYNCHRONOUSLY PUMPED MODE-LOCKED SEMICONDUCTOR PLATELET LASER

Michael M. Salour, Cambridge, Mass., and Charles B. Roxlo, Fanwood, N.J., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 23, 1982, Ser. No. 361,019
Int. Cl.³ H01S 3/04
U.S. Cl. 372—35 14 Claims



1. A synchronously pumped mode-locked semiconductor laser comprising:

a resonant cavity having a first reflective element being partially transmissive at one end thereof and a second reflective element being substantially totally reflective optically aligned with said first reflective element at the other end thereof, said first reflective element being mounted for translational movement;

a semiconductor lasing medium mounted adjacent said second reflective element within said resonant cavity;

means for providing an actively mode-locked beam of electromagnetic radiation for pumping said laser;

means operably connected to said first reflective element for moving said first reflective element in translation in order to adjust the length of said resonant cavity;

means optically interposed within said resonant cavity for directing said pump beam into said resonant cavity and for passing an output laser beam therethrough;

means for providing a vacuum and temperature controlled environment surrounding said semiconductor lasing medium and said second reflective element; and

means optically interposed within said resonant cavity for focusing said pump beam onto said semiconductor lasing medium;

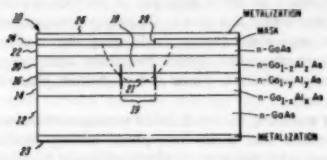
whereby said pump beam initiates lasing action within said resonant cavity and said laser beam outputs from said resonant cavity through said first reflective element in the form of pulses of electromagnetic energy.

4,461,007

INJECTION LASERS WITH SHORT ACTIVE REGIONS

Robert D. Burnham; William Streifer, both of Palo Alto, and Donald R. Scifres, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 8, 1982, Ser. No. 338,455
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—45 **14 Claims**



1. In an injection laser comprising a plurality of contiguous semiconductor layers deposited on a substrate, one of said layers being an active layer and having a lower bandgap and higher index of refraction relative to at least cladding layers immediately adjacent to said active layer, said active layer having an active region to permit carrier recombination and support radiation propagating under lasing conditions in an optical cavity established between transverse end facets of the laser, means incorporated into said laser to confine current to said active region, the extremities of said active region falling short of said end facets so that the regions between the ends of Serial No. 338,455 said active region and said end facets function as a passive waveguide for the propagating radiation and form part of said optical cavity characterized in that said active region comprises an active region strip having a length less than the total length of both of said passive waveguide regions formed at the ends of said active region strip.

4,461,008

TERRACED HETEROSTRUCTURE SEMICONDUCTOR LASER

John C. Connolly, Cranbury, and Dan Botez, Mount Holly, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 9, 1982, Ser. No. 367,212
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—45 **17 Claims**

1. A semiconductor laser comprising a body of material having spaced parallel end faces, at least one of which is partially transparent so that the light may be emitted therefrom;

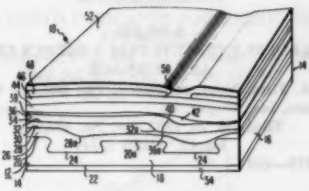
said body comprising:

a substrate having a pair of substantially parallel grooves in a major surface thereof which have a mesa therebetween and which extend between said end faces;

a first confinement layer overlying said substrate surface, the surface of the grooves and the mesa and having a terraced surface with the terrace face extending between the end faces;

an active layer, overlying the terraced surface of said first confinement layer and tapering in decreasing thickness from a portion thereof of maximum thickness which is over a concave portion of the terrace in the surface of the first confinement layer;

a second confinement layer overlying the active layer; and



electrical contacts to said substrate and a portion of said second confinement layer over the portion of maximum thickness of the active layer;

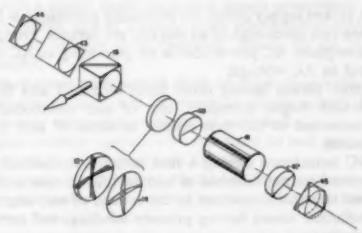
the portion of maximum thickness of said active layer being the recombination region of the laser.

4,461,009

OUTPUT COUPLER FOR LASER RESONATOR

Eric A. Lundstrom, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 15, 1981, Ser. No. 302,346
Int. Cl.³ H01S *3/08*
U.S. Cl. 372—108 **4 Claims**



1. Output coupler apparatus in a flash lamp pumped laser resonator where said resonator includes (1) a first Porro prism and (2) a second Porro prism, said first and second Porro prisms being crossed Porro prisms, (3) a Pockel cell Q-switch, said Q-switch positioned adjacent said first Porro prism and between said first and said second Porro prisms, (4) stress birefringence compensating waveplate apparatus, said compensating apparatus positioned adjacent said second Porro prism and between said Q-switch and said second Porro prism, (5) a Nd:YAG laser rod, said laser rod positioned adjacent said compensating apparatus and between said Q-switch and said compensating apparatus, and, (6) a quarter-wave plate, said quarter-wave plate positioned adjacent said laser rod and between said laser rod and said Q-switch, said output coupler apparatus comprising:

a birefringent lens, said lens having a face having a radius of curvature and positioned in said resonator to interact with laser light produced in said resonator, said lens positioned adjacent said quarter-wave plate and between said quarter-wave plate and said Q-switch, said lens having a phase advance angle predetermined by lens parameters selected to produce said angle, said lens parameters being a lens material, the centerline thickness of said lens and the radius of curvature of said lens; and,

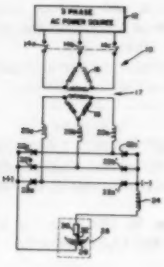
laser light polarizing means, positioned in said resonator between said Q-switch and said birefringent lens, for splitting said laser light into a reflected light beam and a transmitted light beam, said transmitted light beam being

fed back for use in said resonator and having a predetermined nonuniform feedback distribution, said nonuniform feedback distribution being a function of said phase advance angle of said birefringent lens.

4,461,010
POWER SUPPLY CIRCUIT FOR A DIRECT CURRENT ARC FURNACE

Charles H. Titus, Newtown Square, Pa., assignor to Electro-Petroleum, Inc., Wayne, Pa.

Filed Jul. 29, 1982, Ser. No. 402,991
Int. Cl.³ H05B 7/144
U.S. Cl. 373—108 **21 Claims**



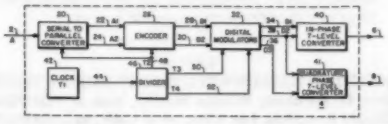
1. A power supply circuit for providing a continuous DC arc between two electrodes of an electric arc furnace, comprising:
- a three-phase AC power source for providing an AC current and an AC voltage;
- rectifier means having three input terminals and first and second output terminals, one of said electrodes being connected to the first output terminal of said rectifier means;
- a DC inductance having a first terminal connected to the second output terminal of said rectifier means and a second terminal connected to the second of said electrodes;
- transformer means having primary windings and secondary windings;
- first, second and third linear reactors for producing a change in phase angle between the AC current and AC voltage in response to a change in DC arc length to control the DC arc current and power input to the furnace; and
- circuit means connecting the linear reactors and the transformer means in series between the AC power source and the rectifier means.

4,461,011
METHOD AND APPARATUS FOR CONVERTING BINARY INFORMATION INTO A HIGH DENSITY SINGLE-SIDEBAND SIGNAL

Adam Lender, Palo Alto, and Henry H. Olszanski, Belmont, both of Calif., assignors to GTE Network Systems Incorporated, Phoenix, Ariz.

Filed Apr. 30, 1979, Ser. No. 34,321
Int. Cl.³ H04L 25/34, 27/02
U.S. Cl. 375—18 **8 Claims**

1. Apparatus for generating a single-sideband signal from a serial bit stream, having a bit rate of K bits per second, which comprises:
- input terminals arranged to accept the serial bit stream;
- a timing circuit which provides clock pulse signals of T2 at a pulse repetition rate of K/2 bits per second, and of T3 and T4 at a pulse repetition rate of K/8 bits per second, T3 being in-phase and T4 being in quadrature-phase with the T2 clock pulse signal;
- means for dividing the serial bit stream into a pair of parallel bit streams, each having a bit rate of K/2 bits per second, the first and second bit streams of the pair being made up, respectively, of the odd and even numbered bits in the serial bit stream, said first bit stream being designated A1 and said second bit stream being designated A1;
- means for encoding said A1 and A2 parallel bit streams to obtain first and second encoded binary bit streams designated, respectively, B1 and B2 each at the bit rate K/2;
- means for digitally modulating the encoded bit streams B1 and B2 with both the T3 clock signal and the T4 clock signal so as to obtain an in-phase digitally modulated signal, and a quadrature-phase digitally modulated signal;

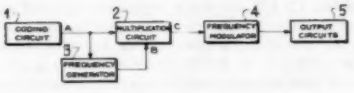


- means for transforming the in-phase and quadrature-phase digitally modulated signals into separate 7-level in-phase and 7-level quadrature-phase signals, respectively;
- a line frequency oscillator arranged to provide in-phase and quadrature-phase line carrier frequency components;
- means for separately analog modulating the in-phase and quadrature-phase line carrier frequency components, respectively, with the in-phase and quadrature-phase 7-level signals; and
- means for summing the modulation products obtained from the in-phase and quadrature-phase analog modulation processes, whereby a single-sideband signal is obtained.

4,461,012
TRANSMITTER AND RECEIVER FOR TRANSMITTING DIGITAL SIGNALS

Jean P. Dehaene, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 4, 1981, Ser. No. 240,285
Claims priority, application France, Mar. 5, 1980, 80 04947
Int. Cl.³ H04L 27/12
U.S. Cl. 375—62 **2 Claims**

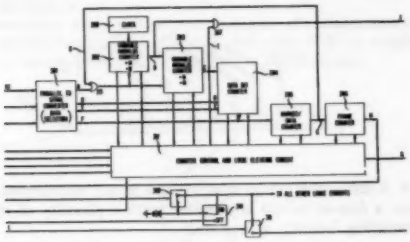


1. A transmitter for transmitting a signal frequency modulated in accordance with encoded digital signals having a data rate, said digital signals having leading edges and a zero direct current component, said transmitter comprising:
- a port for receiving said digital signals;
- a frequency modulator for frequency modulating a carrier frequency with a coupled signal; and
- coupling means, connecting said port to said frequency modulator, for generating said coupled signal which, when modulated onto said carrier frequency by said frequency modulator, enables said frequency modulator to produce a signal to be transmitted having a component at said carrier frequency, said coupling means including:
- frequency generating means, connected to said port, for generating square-wave signals at a frequency equal to said data rate, said square-wave signals being synchronized with said leading edges of said digital signals, and
- a multiplication circuit having a first input coupled to said port, a second input coupled to said frequency generating means and an output coupled to said frequency modulator.

4,461,013
FREQUENCY MODULATION TRANSMITTER FOR VOICE OR DATA

Gregory Lese, Howell, and Donald H. Nash, Colts Neck, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 251,258, Apr. 6, 1981. This application Dec. 6, 1982, Ser. No. 447,019
Int. Cl.³ H03C *3/00*
U.S. Cl. 375—65 9 Claims



1. A frequency shift keyed signal generator circuit characterized by

a first variable modulus counter (302) for dividing a clock frequency by a particular first or second modulus (M or N), an applied input (A) being a binary zero or one data signal respectively, the output being a frequency shift keyed signal (B),

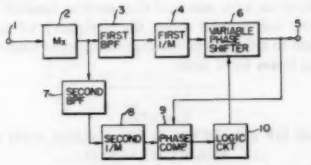
a second variable modulus counter (303), responsive to the applied input signal (A) and the frequency shift keyed output signal (B) of the first variable modulus counter (302), for dividing the frequency shift keyed output signal by the predetermined second or first modulus (N or M), the output (C) being at the bit rate of the applied input signal (A), and

a data bit counter (304), responsive to the output of the second variable modulus counter (303), for dividing the output of the second variable modulus counter by a particular binary quantity of data bits.

4,461,014
CARRIER REGENERATING CIRCUIT

Tadashi Fujino, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1981, Ser. No. 304,499
Claims priority, application Japan, Sep. 23, 1980, 55-132500; Sep. 23, 1980, 55-132501
Int. Cl.³ H04L *27/22*
U.S. Cl. 375—83 7 Claims



1. In a carrier regenerating circuit of the type having a first signal path, including a first band pass filter, for regenerating a first carrier signal from a received M-phase shift keying (PSK) signal, where M is an integer greater than one, the improvement comprising:

a second signal path, including a second band pass filter having a narrower band width band than said first band pass filter for generating a second carrier signal from said PSK signal;

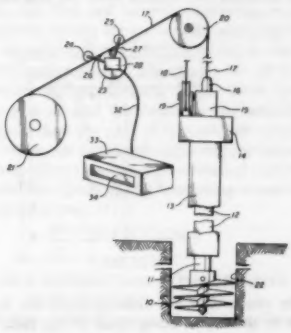
phase comparison means for phase comparing said first and second regenerated carriers; and

variable phase shift means for receiving said first regenerated carrier signal and shifting the phase thereof in accordance with the results of said phase comparison.

4,461,015
DIGITAL DEPTH INDICATOR FOR EARTH DRILLING APPARATUS

Joseph A. Kulhavy, P.O. Box 727, Sherman, Tex. 75090

Filed Jul. 27, 1981, Ser. No. 287,440
Int. Cl.³ G06F *11/32*
U.S. Cl. 377—24 9 Claims



1. The combination of an earth drilling apparatus having operating means for positively raising and lowering a drill or auger with a digital depth indicating means comprising

rotary means, having a rotary shaft, positioned in operating relation to said drill operating means to be rotated thereby,

a two-channel incremental shaft encoder cooperable with said rotary shaft and operable to produce dual digital pulses in response to rotation of said shaft,

a digital counter operatively connected to said encoder to respond to pulses produced thereby,

said counter comprising a digital up/down counter and a programmable ÷N counter, each connected to receive pulses from said encoder,

said ÷N counter including switches to set the same for the type or model of drilling apparatus and for digital display in English or metric units,

digital display means operatively connected to said counter to respond to and display the output therefrom in digital units of depth of said drill or auger, and

said digital up/down counter being connected to receive ÷N pulses from said ÷N counter and to said digital display means.

4,461,016
METHOD OF AND DEVICE FOR FORMING AN IMAGE OF A LAYER OF A THREE-DIMENSIONAL OBJECT

Hermann Weiss, Duvenstedt, and Erhard Klotz, Halstenbek, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 193,208, Oct. 2, 1980, abandoned. This application Dec. 23, 1982, Ser. No. 452,574
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940005
Int. Cl.³ A61B *6/00*
U.S. Cl. 378—23 12 Claims

1. A method of forming an image of a layer of a three-dimensional object comprising the steps of:

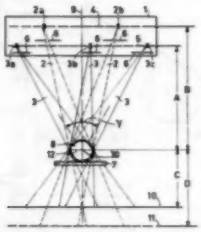
irradiating the object with radiation produced by a first radiation source, said first radiation source comprising a group of radiation sources which are arranged in a first radiation source plane;

irradiating the object with radiation produced by a second radiation source which is arranged in a second radiation

source plane, the second radiation source plane being parallel to the first radiation source plane;

recording shadow images, produced by irradiating the object with the first source, on a radiation-sensitive layer in a first recording plane which is parallel to the radiation source planes;

recording shadow images, produced by irradiating the object with the second source, on a radiation-sensitive layer in a second recording plane which is parallel to the first recording plane but which is situated at a different distance from the object than the first recording plane, the ratio between the distance from the first radiation source



to the object and the distance from the first recording plane to the object being equal to the ratio between the distance from the second radiation source to the object and the distance from the second recording plane to the object;

scaling the shadow images;

consecutively switching the first and second radiation sources on and off; and

forming an image of the layer by superposition and summing of the recorded shadow images according to the positions of all radiation sources used to irradiate the object.

4,461,017

FLUORESCENT X-RAY DEVICE

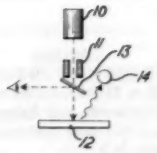
Toshiyuki Koga, and Hiroshi Ishijima, both of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Jan. 27, 1982, Ser. No. 343,199

Claims priority, application Japan, Feb. 4, 1981, 56-14677[U]

Int. Cl.³ G01N *23/223;* H05G *1/02*

U.S. Cl. 378—044 **7 Claims**



1. In a fluorescent X-ray device for irradiating a sample with X-rays: an X-ray tube for emitting X-rays; collimating means for collimating the X-rays into an X-ray beam and directing the X-ray beam along an X-ray path to a sample; reflecting means stationarily disposed along the X-ray path downstream of the collimating means and composed of a material which effectively transmits therethrough the X-ray beam to enable the sample to be irradiated with X-rays and which effectively reflects visible light reflected by the sample to enable an image of the sample to be viewed by an observer; and detecting means for detecting fluorescent X-rays emitted from the sample.

4,461,018

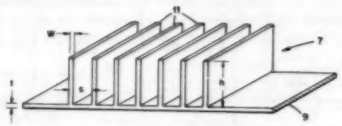
DIFFRACTION CRYSTAL FOR SAGITTALLY FOCUSING X-RAYS

Gene E. Ice, and Cullie J. Sparks, Jr., both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 7, 1982, Ser. No. 385,993

Int. Cl.³ G01N *23/20*

U.S. Cl. 378—84 **10 Claims**



1. A diffraction crystal comprising a planar monocrystalline base, a face of which is provided with a plurality of rigid, upstanding, laterally spaced ribs.

4,461,019

ROTARY-ANODE X-RAY TUBE

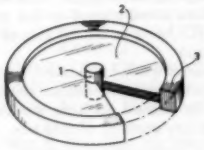
Bernhard Lersmacher, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 21, 1981, Ser. No. 304,425

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040719

Int. Cl.³ H01J *35/10*

U.S. Cl. 378—125 **2 Claims**



1. A rotary anode x-ray tube comprising a basic body structure of at least partly carbon, a layer of pyrolytic graphite on the surface of said basic body structure, and a layer of a high-melting point metal on said layer of pyrolytic graphite, wherein said basic body structure includes a carrier body section and a ring section connected to said carrier body section, said ring section being a lamination of graphite foils, and wherein said carrier body section has a disk-like structure for rotation about an axis, and said ring section consists of a tape-like graphite foil wound about the periphery of said carrier body section to a thickness corresponding to at least a width of an electron beam focal path.

4,461,020

METHOD OF PRODUCING AN ANODE AND ANODE THUS OBTAINED

Horst Hübner, Aachen, Fed. Rep. of Germany; Frederik Magendans, and Bernhard J. P. Van Rheenen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,634

Claims priority, application Netherlands, Apr. 7, 1981, 8101697

Int. Cl.³ H01J *35/08*

U.S. Cl. 378—143 **8 Claims**

1. An anode for X-ray tubes comprising a substrate of molybdenum or molybdenum alloy, a first layer on said substrate of molybdenum or molybdenum alloy having more than 95%

by weight of molybdenum, a second layer on said first layer of a tungsten-molybdenum alloy, said second layer having a composition at a side contiguous to said first layer of 95–100% by weight of molybdenum content and 0–5% by weight of tungsten content, said composition varying across said second layer to a composition at the opposite side from said first layer of 0–5% by weight of molybdenum content and 95–100% by weight of tungsten content, and a third layer on said second layer of tungsten or tungsten alloy.

5. A method of producing anodes for X-ray tubes comprising the steps of

chemically vapor depositing a first layer of molybdenum or molybdenum alloy containing more than 95% by weight of molybdenum onto a substrate of molybdenum,

chemically vapor depositing a second layer of a tungsten-molybdenum alloy onto said first layer, said second layer having a composition at a side contiguous to said first layer of 95–100% by weight of molybdenum content and 0–5% by weight of tungsten content, said composition varying across said second layer to a composition at the opposite side from said first layer of 0–5% by weight of molybdenum content and 95–100% by weight of tungsten content,

chemically vapor depositing a third layer of tungsten or tungsten alloy onto said opposite side of said second layer, and

annealing said substrate and said layers in a non-oxidizing atmosphere for 10 minutes to 6 hours at 1200°–1700° C.

4,461,021
CIRCUIT ARRANGEMENT FOR RECEIVING TWO MODULATING SIGNALS, MORE SPECIFICALLY FOR TELEVISION

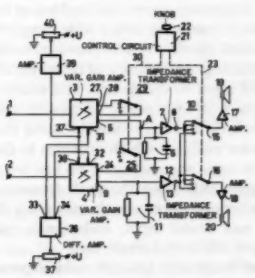
Henning Schwarz, Reinbek, and Ulf H. Buhse, Kollmar, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 2, 1982, Ser. No. 414,110

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135060

Int. Cl.³ H04N *7/04, 5/60*

U.S. Cl. 381—2 **5 Claims**



1. A circuit arrangement for receiving two modulating signals, more specifically for television, the first modulating signal (K_1), for example a stereo sum signal (L+R) or a first independent sound signal, being transmitted on a first carrier and the second modulating signal (K_2), for example a right channel signal (2R) or a second independent sound signal, being transmitted on a second carrier, the circuit arrangement having, for stereo reception, means for combining said two modulating signals to form a left channel signal, wherein the gain for the first modulating signal is a factor of 2 higher than the gain for the second modulating signal, and, when said two independent sound signals are received, the gains for said two modulating signals are equal, characterized in that said circuit arrangement further comprises a first and a second variable-gain amplifier through which said first and second modulating signals are passed, respectively, means for switchably adjusting the gain of one of said variable-gain amplifiers whereby for the reception of said two independent sound signals the gains of said variable amplifiers are substantially equal, while for stereo reception, the gain of said first variable-gain amplifier is a factor of 2 higher than the gain of said second variable-gain amplifier, and means for oppositely adjusting the gains of said variable-gain amplifiers to achieve an optimum combining of said two modulating signals in said combining means for optimum stereo reproduction.

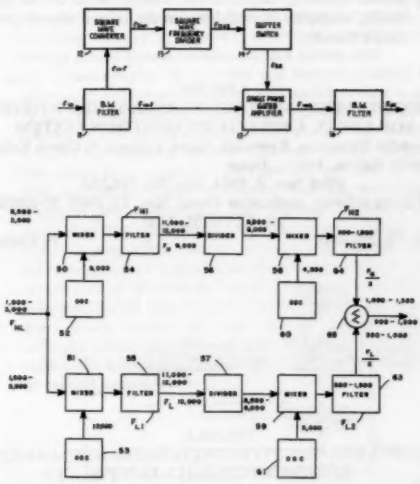
4,461,022
EXPANDABLE BANDWIDTH COMPRESSION AND RESTORATION SYSTEM

Michael W. Slagley, 11661 Flamingo Dr., Garden Grove, Calif. 92641

Continuation of Ser. No. 260,260, May 4, 1982, which is a continuation-in-part of Ser. No. 057,692, Jul. 16, 1979. This application Jan. 25, 1983, Ser. No. 460,892

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—29 **25 Claims**



1. An apparatus for compressing the frequency bandwidth of analog signals of varying amplitude and/or frequency and having modulation information thereon, comprising:

a. a first bandpass filter (11) tuned to a predominant frequency of the information signal (fm), the input terminal of said filter connected to receive said information signal;

b. a square wave converter (12) for converting the output signal (fmf) from the first bandpass filter to a bipolar, quasi-square wave signal (fSW1) at the fundamental frequency of said information signal, the input of said square

wave converter is coupled to the output of said first bandpass filter;

c. a square wave frequency divider (13) comprising n cascaded flip-flops, where n is at least one, for converting the quasi-square wave signal (fSW1) to a frequency-divided square-wave signal (fSW2) at a frequency equal to $\frac{1}{2^n}$ times the frequency of the quasi-square wave signal (fSW1), the input of said square-wave frequency divider (13) is coupled to the output of said square wave converter (12);

d. a non-inverting unipolar gated amplifier (15) an input terminal of which is coupled to the output of said first bandpass filter (11);

e. a buffer switch (14), the input of which is coupled to the output of said square wave frequency divider (13) and the output of which buffer switch is coupled to the gate input of said gated amplifier (15) for selectively gating on the gated amplifier in response to one polarity of said quasi-square wave; and

f. a second bandpass filter (16) tuned to the frequency of said frequency divided square wave, the input of said second bandpass filter is coupled to the output of said gated amplifier whereby only one polarity portion of said output signal from said first bandpass filter is selectively passed through said second bandpass filter.

23. The apparatus recited in claim 3 including,

bandwidth expander means connected to the output of said summing amplifier (18), said bandwidth expander means comprising;

a separate input bandpass filter (41-1) for each bandwidth compression channel and tuned to a particular portion of the frequency spectrum of the information signal of the related bandwidth compression channel,

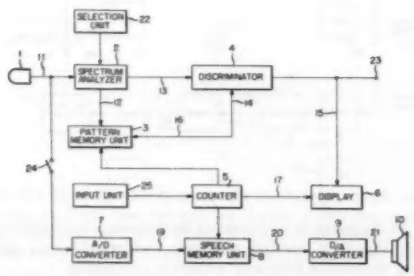
a separate analog multiplier circuit (20-1) respectively connected to each said separate input bandpass filter, and

a second summing amplifier (42) connected to all of said analog multiplier circuits to sum the output signals produced thereby.

4,461,023
REGISTRATION METHOD OF REGISTERED WORDS FOR USE IN A SPEECH RECOGNITION SYSTEM

Hirohiko Katayama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1981, Ser. No. 318,262
Claims priority, application Japan, Nov. 12, 1980, 55-159235
Int. Cl.³ G10L 1/00
U.S. Cl. 381—43 **12 Claims**



1. A speech recognition system comprising:

input means for inputting spoken words;

analyzing means for analyzing and for patterning said spoken words inputted by said input means;

first memory means for storing the patterns of said spoken words analyzed and patterned by said analyzing means;

second memory means for storing each of said spoken words inputted by said input means;

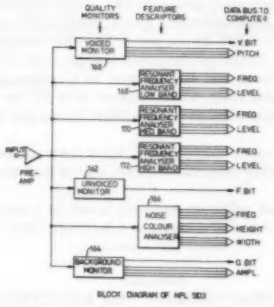
address specifying means for specifying the same address of said spoken words analyzed and patterned and stored in said first memory means and said spoken words stored in said second memory means, the content of said address specifying means being updated in response to each of said spoken words inputted by said input means; and

voice output means for outputting said spoken words stored in said second memory means addressed in accordance with the content of said address specifying means.

4,461,024
INPUT DEVICE FOR COMPUTER SPEECH RECOGNITION SYSTEM

Ralph E. Rengger, Staines, and David R. Manning, Morden, both of England, assignors to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Dec. 1, 1981, Ser. No. 326,444
Claims priority, application United Kingdom, Dec. 9, 1980, 8039425
Int. Cl.³ G10L 1/00
U.S. Cl. 381—46 **10 Claims**



BLOCK DIAGRAM OF NPL SDI

1. A speech sound input device for providing information to a computer in a system of computer recognition of speech comprising

(i) a voiced monitor which provides to the computer a signal indicating whether the sound input to the device has a fundamental repetitive structure, and signals indicating the periodicity of any such structure;

(ii) an unvoiced monitor which provides to the computer a signal indicating whether the sound input to the device has no low frequency component and has at the same time high frequency components in a wide range of frequency;

(iii) a background monitor which provides to the computer a signal indicating the presence of relatively stable energy in the sound input to the device, characteristic of background noise with an absence of speech, and means for tracking the level of such relatively stable energy;

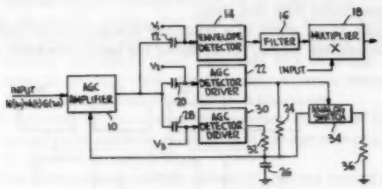
(iv) a noise color analyzer which provides to the computer, in relation to input sounds having no low frequency component, signals indicating the peak frequency of sound input to the input device, signals indicating the peak amplitude of said sound input, and signals indicating the bandwidth of said sound input; and

(v) a resonant frequency analyzer which provides to the computer, in relation to input sounds having a fundamental repetitive structure, signals indicating the frequency of the resonant content of the input sound and signals indicating its level of correlation.

4,461,025
AUTOMATIC BACKGROUND NOISE SUPPRESSOR

David Franklin, Somerville, Mass., assignor to Audiological Engineering Corporation, Somerville, Mass.

Filed Jun. 22, 1982, Ser. No. 390,840
Int. Cl.[3] H04B 1/10
U.S. Cl. 381—56 21 Claims



1. An automatic signal enhancement system for processing an audio input signal containing unwanted sustained components and desired transient components and providing a system output signal which is present only when said desired transient components are present in said input signal, said system comprising:

first means responsive to application of first and second signals thereto for providing said system output signal only when both said first and second signals are present and said first signal exceeds a predetermined amplitude level;

second means connected to receive said input signal for providing a control signal at an amplitude above said predetermined amplitude level only when said desired transient components are present in said input signal;

means for connecting said control signal to said first means as said first signal; and

means for connecting said second signal to said first means;

wherein said second signal is said audio input signal;

wherein said second means comprises:

automatic gain control means responsive to said input signal for providing a further signal at a pre-selected amplitude when only said unwanted sustained component and not said desired transient components are present in said input signal, and for providing said further signal at an amplitude which exceeds said pre-selected amplitude and as a function of the amplitude of said desired transient components when both said unwanted sustained components and desired transient components are present in said input signal;

envelope detector means connected to receive said further signal for providing an envelope-detected version of said further signal only when said further signal amplitude exceeds said pre-established amplitude; and

filter means connected to receive said detected signal and to provide said control signal;

wherein said automatic gain control means comprises:

variable gain amplifier means connected to receive said input signal and for providing said further signal; and

slow-attack, fast-release gain control means responsive to the further signal for adjusting the gain of said variable gain amplifier means in response to said unwanted sustained components such that said further signal amplitude is maintained at said pre-selected amplitude.

4,461,026
RADIO WITH AUDIO GRAPHIC EQUALIZER

David J. Priniski, Lake-in-the-Hills, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 114,018, Jan. 21, 1980, Pat. No. 4,285,065. This application Jul. 20, 1981, Ser. No. 285,234
Int. Cl.[3] H03G 5/02
U.S. Cl. 381—98 7 Claims

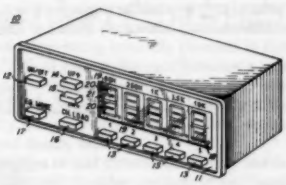
1. An audio entertainment device for providing an output of audible output signals in an audio band, said output signals related to a predetermined entertainment channel, said device comprising:

a first counter in said entertainment means, the count of said first counter being incremented in response to each counting pulse received by said counter to develop an accumulated count related to the number of received counting pulses, said first counter count controlling the audible output signals of said entertainment device;

at least a second counter, separate from said first counter, included in said entertainment means, the count of said second counter being determined independently with respect to the count in said first counter and being incremented in response to each counting pulse received by said second counter to develop an accumulated count related to the number of received counting pulses, said second counter count also controlling the audible output signals of said entertainment device;

said first and second counters both being simultaneously and independently operative to control the audible output signals of said entertainment device in accordance with the counts in said first and second counters,

counter control means selectively coupled to said first and



second counters for selectively independently incrementally adjusting the count of a selected one of said first and second counters by providing a desired number of pulses to said selected one of said first and second counters for counting thereby in response to manual actuation of a switch means in said counter control means; and

select means coupled to said first and second counters for effectively selectively coupling said switch means to one of said first and second counters for control of the count thereof by effectively coupling said pulses to said selected counter for counting thereby while said switch means is decoupled from control of the count of the other of said first and second counters, and for coupling said switch means to said other of said first and second counters for control of the count thereof by effectively coupling said pulses to said other counter for counting thereby while said switch means is decoupled from control of the count of said one of said first and second counters, each of said counters maintaining its previous count when decoupled from count control by said counter control means, whereby manual actuation of said counter control switch means can selectively control the count in either said first or second counters.

4,461,027
CHARACTER SEPARATING SYSTEM IN USE FOR AN OPTICAL CHARACTER READER

Tsutomu Ikeda; Masanori Iwamoto, both of Tokyo, and Shuji Kizu, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 4, 1981, Ser. No. 327,707
Int. Cl.[3] G06K 9/34
U.S. Cl. 382—9 3 Claims

1. A character separating system for an optical character reader comprising:

means for producing a video signal corresponding to a character pattern containing chained characters;

first converting means, coupled to said producing means, for

converting the video signal into a binary signal having single bit pattern data;

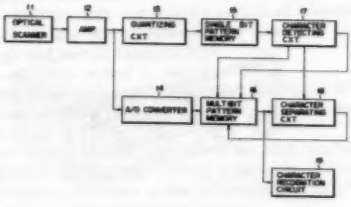
second converting means, coupled to said producing means, for converting said video signal into multibit pattern data representing signal levels of the video signal;

judging means for judging whether the pattern data corresponding to said chained characters are present in the single bit pattern data from said first converting means;

means, responsive to a result of judgement by said judging means that the chained characters are present, for extracting chained character pattern data corresponding to said chained character from the multibit pattern data of said second converting means, and detecting at least one connecting portion of the chained characters from the signal levels of the chained character pattern data; and

means for separating said chained characters at said connecting portion,

the single bit pattern data from said first converting means and the multibit pattern data from said second converting means being stored into a single bit pattern memory and a multibit pattern memory, respectively, said judging means including means for forming horizontal and vertical projection data on the basis of the single bit pattern data read out from said single bit pattern memory, means for forming a mask of the pattern data corresponding to said chained characters on the basis of the projection data from said projection data means, and means for judging whether the chained characters are present or not on the basis of a size of said mask,



said projection data means of said judging means including means for storing in a circulating manner the single bit data read out for each line from said signal bit pattern memory to form the horizontal projection data, and means for counting lines read out for each line from said single bit pattern memory to form the vertical projection data said mask forming means of said judging means including means for calculating a height (H) by the horizontal projection data from said horizontal projection means and means for calculating a width (W) of said mask from the vertical projection data of said vertical projection means,

said judging means including means for calculating a ratio of the height (H) to the width (W) of said mask, and comparing means for comparing the ratio from said calculating means with a reference value to judge as to whether the chained characters are present or not.

4,461,028

IDENTIFYING SYSTEM

Hiroshi Okubo, Chiba, Japan, assignor to Omron Tateisielectronics Co., Kyoto, Japan

Filed Oct. 14, 1981, Ser. No. 311,456

Claims priority, application Japan, Oct. 15, 1980, 55-144983

Int. Cl.³ G06K 9/66

U.S. Cl. 382—15 **8 Claims**

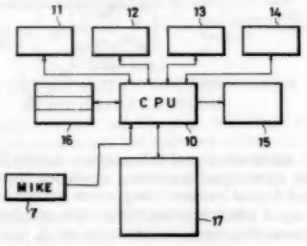
1. A system for indentification verification by comparing a current information input with information previously stored, comprising:

a memory having, for each of a plurality of items to be identification verified, a first memory area for storing original reference information for that item and a second memory area for storing latest reference information for that item;

means for generating from an item to be identified, current impression information;

first means for comparing, based on first predetermined criteria, the current impression information with the latest reference information stored in said second memory area associated with that item;

means, in the event of a favorable comparison by said first comparing means, for updating the latest reference information in memory based on the current impression information;



second means for comparing based on second predetermined criteria and in the event of an unfavorable comparison by said first comparing means, the current impression information with the original reference information in said first memory area associated with that item; and

means, in the event of a favorable comparison by said second comparing means, for updating the original reference information based on the current impression information.

4,461,029

AUTOMATIC HANDWRITTEN AND TYPEWRITTEN CHARACTER-READING DEVICE

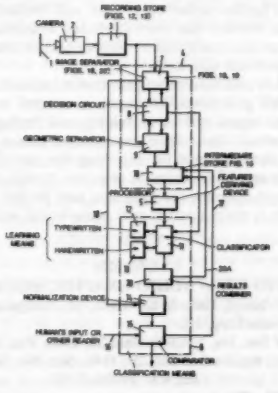
Jan F. van Bilzen, and Joannes van Staveren, Zoetermeer, both of Netherlands, assignors to Staat der Nederlanden (Staatsbedrijf der Posterijen, Telegrafie en Telefonie), The Hague, Netherlands

Filed Nov. 9, 1981, Ser. No. 319,206

Claims priority, application Netherlands, Nov. 14, 1980, 8006241

Int. Cl.³ G06K 9/46, 9/40, 9/44

U.S. Cl. 382—25 **15 Claims**



8. A system for automatically reading characters filled-in in boxes on a document comprising:

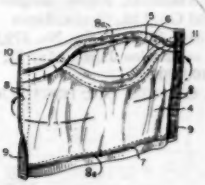
(A) scanning each of said boxes to form an area of 64×64 image points,
(B) recording all of said points of all of said boxes,
(C) separating the characters so that one character only is is recorded in each image area of 64×64 image points,
(D) moving the image recorded in each 64×64 image area into the upper lefthand corner of its image area,
(E) separately storing the four adjacent image points in squares of four image points, which squares are homogeneously distributed over each said 64×64 image point area, to produce four corresponding separate records of 32×32 image point areas for each character,
(F) selecting at least one of said separate records of 32×32 image point areas for enhancing the image of a character to improve its readability,
(G) deriving features of the enhanced selected record of the character image, and
(H) classifying the character according to the derived features by means of a probability table.

4,461,030

BAG AND CLOSURE THEREFOR

Phillip E. Knudsen, Suite 827, 2301 Jeff. Davis Hwy., Arlington, Va. 22202

Filed Sep. 30, 1982, Ser. No. 429,832
Int. Cl.³ A41D *13/00*
U.S. Cl. 224—222 **11 Claims**



1. A bag comprising at least one sheet of a flexible material, having two ends and two ends, folded parallel to the ends to provide a front and back surface and sealed substantially along the edges to provide a pocket, each of said surfaces extending toward an opening into said pocket through which articles for support may pass and from which articles may be removed, one of said surfaces extending beyond said opening and folded over the end of said other surface so that the end of the folded over surface is positioned below the end of the other surface throughout substantially their entire lengths, and the folded over end is positioned outside of said bag, and elastic means under tension at each of the ends for drawing said sealed edges toward each other and when said bag is stretched in the direction of said sealed edges and maintained in a substantially stretched condition the elastic means of one end acts toward the plastic means of the other end throughout substantially the entire length of the ends and said elastic means of one end acts toward one surface of the bag and said elastic means of the other end acts toward both surfaces of the bag below the first mentioned end throughout substantially the entire length of the ends to provide a plurality of closure seals at said opening.

4,461,031

TUBULAR BAG AND METHOD OF MAKING THE SAME

Robert H. Blamer, Westmont, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.

Filed Mar. 10, 1981, Ser. No. 242,267
Int. Cl.³ B65D *33/22*
U.S. Cl. 383—123 **3 Claims**

1. A tubular bag adapted to be pressurized by popping corn after it has been partially filled with unpopped corn and an open end of the bag sealed, comprising:

(a) a longitudinal increment of a web of heat resistant material;
(b) a first band of thermosetting glue imprinted across the entire length of the web at the end edge of said increment on a surface that is the prospective interior of the bag;
(c) a second band and a third band of thermosetting glue imprinted on the opposite side of the web at said end edge of said increment in registry with end portions of said first band, and jointly having a length corresponding to but slightly exceeding the prospective width of the bag;

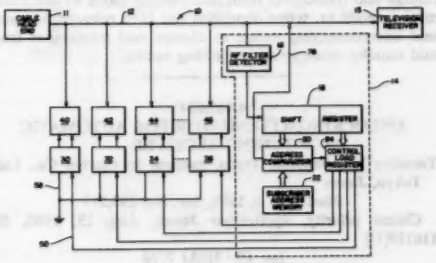
(d) said increment of web being formed as a tube with longitudinal marginal edges of the web overlapping each other and joined to form a back seam, portions intermediate said marginal edges being inwardly directed in forming a pair of longitudinal gussets disposed between a front panel and a rear panel, the rear panel including said back seam;
(e) said gussetted tube having a fold along a line extending centrally along the length of said first, second and third imprinted bands; and
(f) each portion of said thermosetting glue bands being thermally fused only to other portions of said bands that are in direct contact therewith.

4,461,032

CATV SERVICE CONTROLLER

Peter C. Skerlos, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jun. 21, 1982, Ser. No. 390,092
Int. Cl.³ H04B *3/06*; H04N *7/16*
U.S. Cl. 455—4 **8 Claims**



8. A method of selectively distributing a plurality of cable television channel frequencies to a plurality of service controllers coupled to a cable distribution network, said method comprising the steps of:
transmitting a first group of data bits representing selective ones of said plurality of cable television channel frequencies on said cable distribution network from a head end thereof;
transmitting a second group of data bits representing an individual service controller on said cable distribution network from said head end;
comparing said second group of data bits with an address code uniquely representing said individual service controller;
filtering out selective ones of said plurality of cable televi-

sion channel frequencies in accordance with said first group of data bits if said second group of data bits and said address code do not correspond or leaving the distribution of said cable television channel frequencies unchanged if said second group of data bits and said address code correspond; and

transmitting a probe signal from said head end to said service controllers for monitoring the status of each of said service controllers and for providing the cable head end with a status signal representing the operating mode of each of said service controllers.

4,461,033

TRANSCEIVER

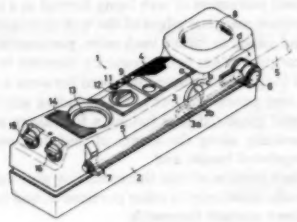
Akira Todo, Kasukabe, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 15, 1982, Ser. No. 434,552

Claims priority, application Japan, Oct. 20, 1981, 56-155895[U]

Int. Cl.³ H04B *1/38*

U.S. Cl. 455—78 **16 Claims**



1. In a transceiver having transmitting, receiving, and standby modes of operation; an apparatus for selectively establishing said modes of operation including means actuable to establish said standby mode of operation, changeover means and interconnecting means for interconnecting said means actuable to establish said standby mode of operation with said changeover means, wherein said change-over means is effective, when depressed, to cause said interconnecting means to change said transceiver from said standby mode to said transmitting mode or, when depressed and then released, to cause said interconnecting means to change said transceiver from said standby mode to said receiving mode.

4,461,034

UNLOCKING ATTENUATOR FOR AUTOMATIC TUNING RECEIVER

Yasuhiro Ida, Saitama, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

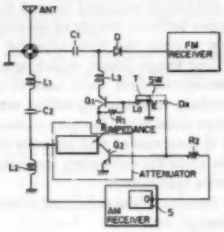
Filed Aug. 6, 1981, Ser. No. 290,517

Claims priority, application Japan, Aug. 15, 1980, 55-116189[U]

Int. Cl.³ H03J *7/18*

U.S. Cl. 455—161 **10 Claims**

1. In combination with an automatic tuning radio receiver comprising radio receiving means having an input terminal to be connected to an antenna, and automatic tuning means actuatable to a first scanning mode so that said receiving means tuningly scans for antenna inputs above a given threshold level, said receiving means then automatically entering a locked non-scanning mode in which it remains tuned to such an input when detected, said receiving means generating a control signal only during said scanning mode; the improvement comprising: attenuating means for controllably attenuating inputs originally detected by said antenna and being operable from a relatively non-attenuating condition to a substantially signal attenuating condition; manually operable switching means operable between a first and a second switching state and coupled with said first attenuator means for respectively inhibiting and enabling operation of said attenuating means; and means responsive to said control signal of said receiving means when said switching means is in said second switching state for operating said first attenuator means in said



signal attenuating condition only during the generation of said control signal, whereby when operation of said attenuating means is enabled the attenuating means is operative to attenuate the antenna received signal only during the scanning mode of the receiving means.

4,461,035

TELEVISION SYNCHRONOUS RECEIVER

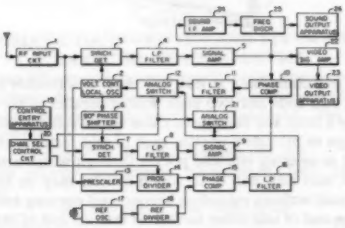
Yoichi Sakamoto, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 19, 1982, Ser. No. 379,994

Claims priority, application Japan, May 22, 1981, 56-78215; Jun. 26, 1981, 56-100270

Int. Cl.³ H03J *7/02;* **H04N** *5/50*

U.S. Cl. 455—164 **4 Claims**



1. A television synchronous receiver comprising a synchronous receiving system and a channel selecting means, wherein said synchronous receiving system comprises:

a first voltage controlled local oscillator;

a means for shifting the phase of an output of said first voltage controlled local oscillator by 90°;

a first and second synchronous detector for detecting an in-phase component and quadrature components of a television broadcast signal by the output of said first voltage controlled local oscillator and an output of said means for shifting the phase of the output of said first voltage controlled local oscillator by 90°, respectively;

a phase comparator having input terminals which are respectively connected to output terminals of said first and second synchronous detectors, for detecting an error between the phase of a video carrier of said television broadcast signal and the phase of the output of said first voltage controlled local oscillator;

a low-pass filter for eliminating a high frequency component of an output of said phase comparator;

a means for applying at least an output of said low-pass filter and an output of said channel selecting means to said first voltage controlled local oscillator, whereby said channel

selecting means establishes the output of said first voltage controlled local oscillator at a frequency which is very near to the video carrier frequency of the television broadcast signal so as to select a desired television signal and said error between the phase of the video carrier of the television broadcast signal and the phase of the output of said first voltage controlled local oscillator is eliminated; and

a means for obtaining a video signal and a sound intermediate frequency carrier from said first synchronous detector.

4,461,036

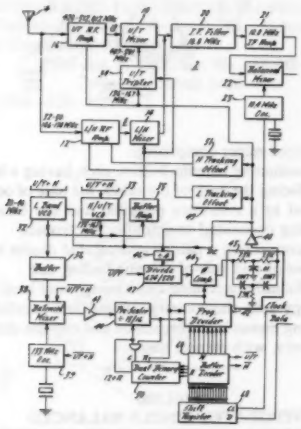
PROCESSOR CONTROLLED SCANNING RADIO RECEIVER

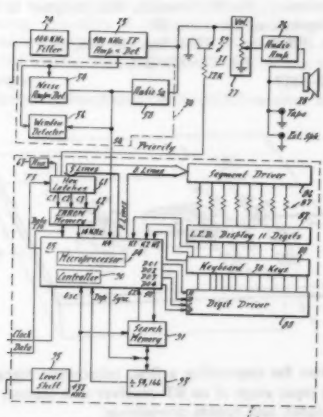
Warren L. Williamson; George H. Fathauer, both of Mesa, Ariz., and Cecil E. Mathis, Indianapolis, Ind., assignors to Masco Corporation of Indiana, Cumberland, Ind.

Continuation of Ser. No. 000,905, Jan. 4, 1979, abandoned, and a continuation-in-part of Ser. No. 847,497, Nov. 1, 1977, abandoned. This application Oct. 24, 1980, Ser. No. 200,537

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—165 **23 Claims**





1. A scanning radio receiver having a plurality of channels for receiving signals at a plurality of discrete frequencies within at least one radio frequency band and comprising:

radio signal frequency conversion and demodulation means for producing an audio signal from received radio frequency signals;

frequency synthesizer means for generating a local oscillator signal for tuning said radio signal frequency conversion and demodulation means and having an input for controlling the frequency of said local oscillator signal;

squelch circuit means for detecting the presence of a received signal at the frequency to which the receiver is tuned;

frequency search circuit means coupled to said frequency synthesizer means input and said squelch circuit means for sequentially and automatically stepping the receiver through said discrete frequencies located until the receiver becomes tuned to a radio frequency at which a received signal is present and resuming stepping the receiver through said discrete frequencies when said received signal terminates;

memory circuit means coupled to said frequency search circuit means for sequentially and automatically storing signals representative of the tuned radio frequencies at which a received signal is present; and

user selectable means including a recall key operable to an active position by the user, said frequency search means including means coupled to said key and said memory circuit means and arranged to respond to operation of said key to said active position for controllably retrieving from said memory circuit means said stored signals.

4,461,037

AUTOMATIC TUNING SYSTEM FOR TELEVISION RECEIVER

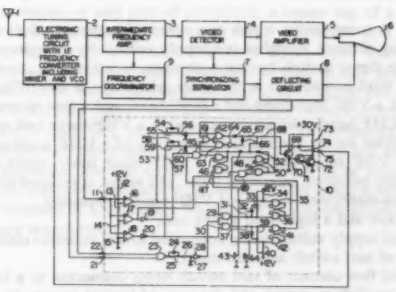
Tsuguo Itsgaki, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 10, 1981, Ser. No. 291,476

Claims priority, application Japan, Aug. 13, 1980, 55-110417

Int. Cl.³ H04B *1/26*; H04N *5/44*

U.S. Cl. 455—169 **12 Claims**



1. An automatic tuning system, comprising:

(a) an electronic tuning means including a frequency converter means having a control terminal supplied with a DC voltage for determining a frequency to be received, said frequency converter means converting a signal received by said electronic tuning means into an intermediate frequency signal;

(b) a frequency discriminator means supplied with said intermediate frequency signal for producing a discrimination signal, said discrimination signal having a magnitude which has a center value when a frequency of said intermediate frequency signal is equal to a predetermined frequency and changes between an upper limit and a lower limit in accordance with a frequency deviation of

said intermediate frequency signal from said predetermined frequency;

(c) voltage generating means having an output terminal coupled to said control terminal and a charge storage means for causing the generation of said DC voltage at said output terminal, said DC voltage being a function of the charge voltage stored by said charge storage means;

(d) current supplying means for supplying a current to said charge storage means to vary the charge voltage stored by said charge storage means;

(e) detection means supplied with said discrimination signal for generating a detection signal when said discrimination signal is beyong said limits; and

(f) control means, responsive to said detection signal, for rendering said current supplying means to be operative for a predetermined duration to cause said magnitude of said discrimination signal to approach toward said center value.

4,461,038

TELEVISION TUNER CIRCUIT

Teijiro Miyoshi, 29-303, 12 ban, Migaoka 1-chome, Neyagawa-shi, Osaka, Japan

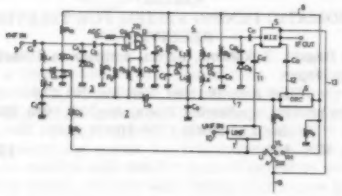
PCT No. PCT/JP81/00330, 371 Date Jul. 14, 1982, 102(e) Date Jul. 14, 9182, PCT Pub. No. WO82/01796, PCT Pub. Date May 27, 1982

PCT Filed Nov. 12, 1981, Ser. No. 403,504

Claims priority, application Japan, Nov. 14, 1980, 55-163763

Int. Cl.³ H04B 1/26

U.S. Cl. 455—176 **4 Claims**



1. A tuner device which uses a variable capacity diode as a tuning element, switches one supply voltage by a single-pole, triple-throw switch having a common contact, first, second and third contacts so as to be set selectively in a VHF-low-band, a VHF high-band and a UHF band, and, when receiving the UHF band, uses a mixer circuit in a VHF tuner unit as an amplifier for an intermediate frequency of a UHF tuner unit, said VHF tuner unit having a VHF input tuner, radio frequency amplifier, interstage tuner, and mixer, connected in the above-mentioned order, said VHF tuner comprising

a low and a high band tuning coil;

said supply voltage being connected to said common contact of said switch and said mixer;

said first contact of said switch being connected to a local oscillation circuit and, by way of biasing means, to the radio frequency amplifier in said VHF tuner unit to thereby turn on said local oscillation circuit and radio frequency amplifier;

said second contact of said switch being connected to intermediate switching diodes which are thereby connected to tuning coils in said interstage tuner for switching on said tuning coils, said second contact being also connected by way of a biasing means to said radio frequency amplifier and connected to said local oscillation circuit to thereby actuate said radio frequency amplifier and local oscillation circuit, said second contact being connected to a circuit node, said node being connected in common to a high-frequency grounding condenser and the anode of a first switching diode, said second contact applying to said node a conduction voltage for the first switching diode through a second switching diode to void said low band coil at said VHF input tuner; and

said third contact of said switch being connected to said UHF tuner unit and also to the node of said first switching diode and high-frequency grounding condenser through a third switching diode, thereby turning on said first switching diode when receiving the UHF band.

4,461,039

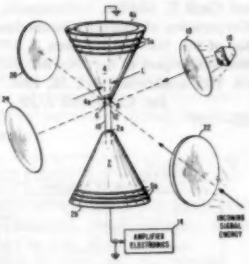
QUASI-OPTICAL BALANCED BICONICAL MIXER

Michael S. Hersman, Playa del Rey, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Sep. 20, 1982, Ser. No. 419,681

Int. Cl.³ H04B 1/26

U.S. Cl. 455—326 **12 Claims**



10. A balanced mixer comprising:

a pair of conductive antenna bodies, each having a base and an apex facing the apex of the other, the base of one being connected to a reference potential and the base of the other being connected to amplifier electronics;

means for connecting a pair of anti-parallel diodes between the apexes of said pair of antenna bodies; and

means for focusing incoming radio energy and local oscillator energy into the vicinity of said anti-parallel diode connecting means in the broadside and end-fire directions, respectively, with respect thereto.

4,461,040

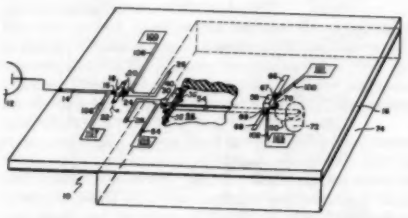
INTEGRATED SINGLE BALANCED MIXER/OSCILLATOR WITH SLOT AND HYBRID COUPLER

Pierre Dobrovolny, North Riverside, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 6, 1983, Ser. No. 456,158

Int. Cl.³ H04B 1/26

U.S. Cl. 455—327 **9 Claims**



1. A system for converting a first, microwave signal provided to an input stage of an RF receiver to a second, lower frequency signal, said system comprising:

a dielectric circuit board having a conductive ground plane on a first side thereof;

a first microstrip conductor positioned on a second side of said circuit board and connected to said receiver input stage for receiving said first signal;

a single balanced mixer circuit having a symmetric reference frequency input port and an unsymmetric RF input port;

a second microstrip conductor located on the second side of said circuit board and connected to said mixer circuit and electromagnetically coupled to said first microstrip for providing a DC decoupled and filtered RF signal to the unsymmetric RF input port of said mixer circuit in response to said first signal, said first and second microstrip conductors sized and positioned relative to one another so as to provide an optimum impedance transformation between the output of said receiver input stage and said single balanced mixer circuit;

a reference frequency signal generator; and

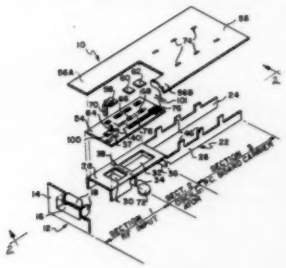
a slot of predetermined length in the ground plane of said circuit board coupling said reference frequency signal generator and the symmetric reference frequency input port of said mixer circuit for providing a reference frequency signal to said mixer circuit in generating said second, lower frequency signal therein.

4,461,041

INTEGRATED RF RECEIVER/WAVEGUIDE

Pierre Dobrovolny, North Riverside, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 5, 1983, Ser. No. 455,688
Int. Cl.³ H04B 1/26
U.S. Cl. 455—328 **11 Claims**



1. A front end portion of an RF receiver comprising:

a waveguide for directing and confining a received microwave signal incident on an end thereof, said waveguide having a plurality of conductive walls for facilitating the confinement and propagation of said received microwave signal therein with one of said walls having an aperture therein;

A microwave integrated circuit (MIC) receiver mounted on a first circuit board and including a plurality of discrete devices in combination with integrated circuitry positioned on the outer surface of said one of said walls immediately exterior to said waveguide; and

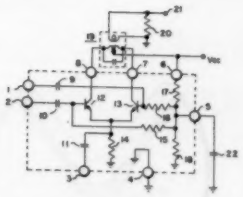
an RF responsive probe inserted through an aperture on said first circuit board and through the aperture in said one of said walls and extending into said waveguide and coupled to said MIC receiver for providing said received microwave signal thereto.

4,461,042

TRANSISTOR BALANCED MIXER

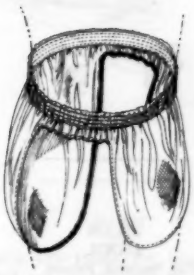
Kenzo Tanabe, and Junji Suzuki, both of Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 9, 1981, Ser. No. 310,365
Claims priority, application Japan, Oct. 13, 1980, 55-143507
Int. Cl.³ H04B 1/16
U.S. Cl. 455—333 **4 Claims**



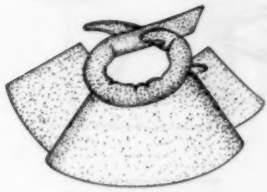
1. A transistor balanced mixer comprising: a pair of transistors whose emitters are connected together as a commoned emitter; an emitter bias resistor having one terminal which is connected to said commoned emitter and another terminal which is connected to ground; a base bias DC voltage source; a pair of base resistors, each of which is respectively connected between a base terminal of one of said pair of transistors and said base bias DC voltage source; a differential type intermediate frequency transformer which is connected between collector terminals of said pair of transistors, a center tap of a primary winding of said transformer being connected to a DC power supply unit; a radio frequency signal input terminal which is connected to said commoned emitter of said pair of transistors for receiving a radio frequency (RF) signal; and two local frequency signal terminals which are respectively connected to said base terminals of said pair of transistors for receiving two phase split local frequency signals having opposite polarities, said two signals being generated by an external source, whereby a frequency converted output signal is output at a terminal of a secondary winding of said intermediate frequency transformer.

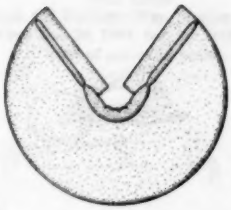
274,669
UNDERGARMENT
John Lyle, 8045 Laflin, Chicago, Ill. 60620
Filed Jul. 21, 1982, Ser. No. 400,444
Term of patent 14 years
U.S. Cl. D2—1



274,670
DISPOSABLE PLASTIC COMBINED APRON, LEG AND FOOT COVER
Jeanette J. Smith, Rte. 2, Box 35, Alta Vista Dr., Red Bluff, Calif. 96080
Filed Jun. 3, 1982, Ser. No. 384,805
Term of patent 14 years
U.S. Cl. D2—29

274,671
INFANT'S BIB
Jacqueline L. Morge, 124 W. 16th St., New York, N.Y. 10011
Filed Feb. 22, 1982, Ser. No. 350,633
Term of patent 14 years
U.S. Cl. D2—226





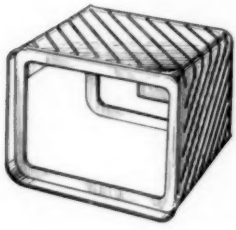
274,672
SHOE
Patricia W. Garrett, 4031 Grove Hill Ct., Norcross, Ga. 30092
Filed Jul. 13, 1982, Ser. No. 397,808
Term of patent 14 years
U.S. Cl. D2—278

274,673
COLLAPSIBLE BOOTJACK
Robert C. McCormick, Dallas, Tex., assignor to HyJacker Products, Inc., Santa Maria, Calif.
Filed Feb. 1, 1982, Ser. No. 344,655
Term of patent 14 years
U.S. Cl. D2—378.2

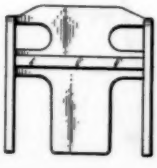
274,674
UMBRELLA HANDLE
James H. Allen, Covington, Ky., assignor to 'totes', incorporated, Loveland, Ohio
Filed Nov. 18, 1981, Ser. No. 322,689
Term of patent 14 years
U.S. Cl. D3—12

274,675
CHAIR
Niels Diffrient, Ridgefield, Conn., assignor to Hauserman Inc., Int. Furniture & Tex Div., Norwalk, Conn.
Filed Apr. 29, 1981, Ser. No. 258,786
Term of patent 14 years
U.S. Cl. D6—366

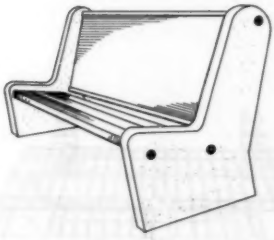
274,676
STOOL
Henry Massonnet, 1760 Nurieux, France
Filed Feb. 2, 1982, Ser. No. 345,180
Claims priority, application France, Aug. 3, 1981, 812724
Term of patent 14 years
U.S. Cl. D6—349



274,677
CHAIR
Winn Weiner, 401 Dudley Rd., Newton, Mass. 02159
Filed Mar. 31, 1982, Ser. No. 364,012
Term of patent 14 years
U.S. Cl. D6—363

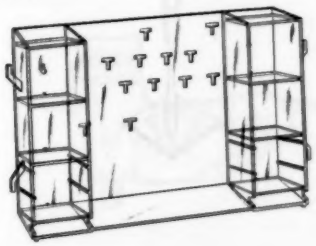


274,678
BENCH
Stanton H. Groman, Beverly Hills, and Robert K. Hisel, Ontario, both of Calif., assignors to Bench Ad Company, Maywood, Calif.
Filed Dec. 28, 1981, Ser. No. 334,936
Term of patent 14 years
U.S. Cl. D6—370

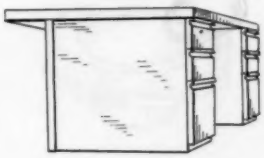


274,679
COT
Richard C. Stehlik, 1234 Hollins Rd., Waynesboro, Va. 22980
Filed Aug. 31, 1981, Ser. No. 297,977
Term of patent 14 years
U.S. Cl. D6—392

274,680
ORGANIZER CABINET HOUSING FOR MEN'S TOILETRY ITEMS
Howard Sussman, 3101 NW. 25th Ave., Pompano Beach, Fla. 33060
Filed Dec. 27, 1982, Ser. No. 453,342
Term of patent 14 years
U.S. Cl. D6—530

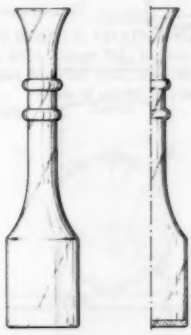


274,681
DESK
Charles Gwathmey, New York, and Robert Siegel, Bedford, both of N.Y., assignors to Knoll International, Inc., New York, N.Y.
Filed Jun. 9, 1981, Ser. No. 272,044
Term of patent 14 years
U.S. Cl. D6—428

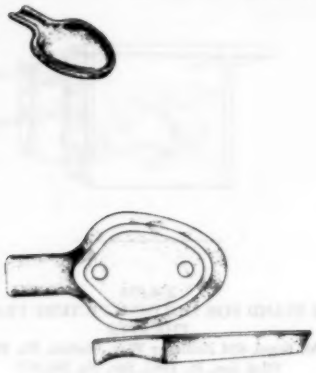


274,682
FRAME STAND FOR HOLDING PICTURE FRAMES OR THE LIKE
Joseph M. Segel, 614 Zollinger Way, Merion, Pa. 19066
Filed Jan. 26, 1982, Ser. No. 342,877
Term of patent 14 years
U.S. Cl. D6—310

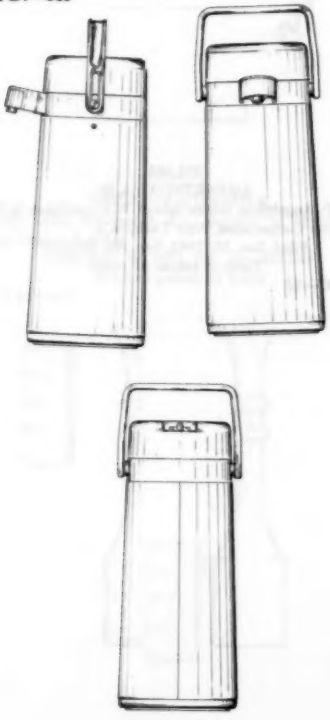
274,683
DRINKING GLASS
Nicholas P. Angelakos, Staten Island, N.Y., assignor to Lancaster Colony Corporation, New York, N.Y.
Filed Jun. 25, 1982, Ser. No. 392,430
Term of patent 14 years
U.S. Cl. D7—15



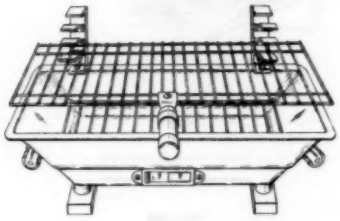
274,684
SPOON REST
Robert D. Norton, Jonesboro, Ak., assignor to Handy Andy Industries, Inc., Jonesboro, Ark.
Filed Jul. 29, 1981, Ser. No. 288,067
Term of patent 14 years
U.S. Cl. D7—73



274,685
VACUUM BOTTLE
Hitoshi Ohmoto, Osaka, Japan, assignor to Zojirushi Vacuum Bottle Co., Ltd., Osaka, Japan
Filed Jul. 18, 1980, Ser. No. 171,012
Claims priority, application Japan, Jan. 21, 1980, 55-1530
Term of patent 14 years
U.S. Cl. D7—313



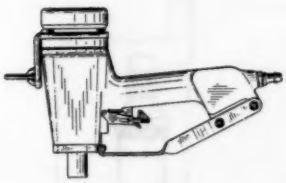
274,686
BARBEQUE GRILL
Keith S. Ambler, Lark Hill Lodge, Moorside, Cleckheaton, West Yorkshire, England
Filed Apr. 2, 1982, Ser. No. 364,693
Claims priority, application United Kingdom, Jul. 10, 1981, 1002882
Term of patent 14 years
U.S. Cl. D7—337



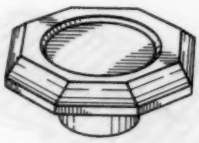
274,687
EDGING TOOL
Richard M. Hass, Portland, Oreg., assignor to Phyllis W. Hass, Tigard, Oreg.
Filed Feb. 8, 1982, Ser. No. 356,121
Term of patent 14 years
U.S. Cl. D8—7

274,688
PULL TAB CAN OPENER
Frank A. Escalante, 2398 E. Birchfield St., Simi Valley, Calif. 93065
Filed Mar. 15, 1982, Ser. No. 358,026
Term of patent 14 years
U.S. Cl. D8—40

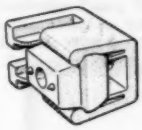
274,689
PNEUMATIC STUNNER
Jerome T. Hamel, Shawnee, and Bernard G. Huff, Shawnee Mission, both of Kans., assignors to Hantover, Inc., Kansas City, Mo.
Filed Mar. 18, 1982, Ser. No. 359,275
Term of patent 14 years
U.S. Cl. D8—68

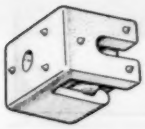


274,690
KNOB
William C. Cesaroni, Glenview, Ill., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Nov. 15, 1982, Ser. No. 441,875
Term of patent 14 years
U.S. Cl. D8—310



274,691
SNAP-LOCK HOLDER
Robert S. Wallace, 823 S. Longwood Ave., Los Angeles, Calif. 90005
Filed Dec. 6, 1982, Ser. No. 447,452
Term of patent 14 years
U.S. Cl. D8—336





274,692
COMBINED BOTTLE, CHAIN AND SUPPORT BASE
Fred A. David, 6672 Abrego Rd., Goleta, Calif. 93117
Filed May 28, 1982, Ser. No. 382,959
Term of patent 14 years
U.S. Cl. D9—309

274,693
CONTAINER FOR SAUSAGE-SHAPED ARTICLES
Joseph P. Cruz, Waterloo, Canada, assignor to DRG Inc., Toronto, Canada
Filed Mar. 29, 1982, Ser. No. 362,724
Claims priority, application Canada, Oct. 6, 1981, 0610816
Term of patent 14 years
U.S. Cl. D9—341

274,694
BOTTLE OR THE LIKE
Donald P. Denhoff, Marietta, Ga., assignor to Sewell Plastics, Inc., Atlanta, Ga.
Filed Mar. 29, 1982, Ser. No. 362,637
Term of patent 14 years
U.S. Cl. D9—350

274,695
CONTAINER FOR LIQUIDS
Daniel Kennedy, 137 Mulberry St., Pawtucket, R.I. 02860
Filed Aug. 3, 1981, Ser. No. 289,563
Term of patent 14 years
U.S. Cl. D9—352

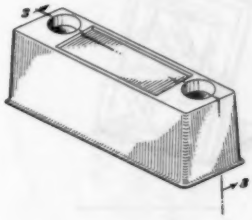
274,696
COMBINED BOTTLE AND POURING SPOUT
John G. Marsden, Manchester Center, Vt., assignor to The Integral Company, Chicago, Ill.
Filed Mar. 4, 1982, Ser. No. 354,768
Term of patent 14 years
U.S. Cl. D9—352

274,697
INK APPLICATOR BOTTLE
Clarence J. Venne, Bensalem, Pa., assignor to Clarence J. Venne Inc., Levittown, Pa.
Filed Mar. 12, 1982, Ser. No. 357,380
Term of patent 14 years
U.S. Cl. D9—352

274,698
NESTABLE CONTAINER FOR LIQUIDS
Charles N. Epperson, Okmulgee, Okla., assignor to Invention Development Equity Associates, Inc., Okmulgee, Okla.
Filed Jan. 18, 1982, Ser. No. 339,993
Term of patent 14 years
U.S. Cl. D9—370

274,699
NESTABLE CONTAINER FOR LIQUID PRODUCTS
Charles N. Epperson, Okmulgee, Okla., assignor to Invention Development Equity Associates, Inc., Okmulgee, Okla.
Filed Jan. 18, 1982, Ser. No. 340,225
Term of patent 14 years
U.S. Cl. D9—370

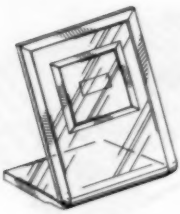
274,700
COVER FOR A PACKAGING TRAY
Lilia S. Sun, Seal Beach, and John C. Anderson, Burbank, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Filed Dec. 15, 1981, Ser. No. 330,975
Term of patent 14 years
U.S. Cl. D9—435



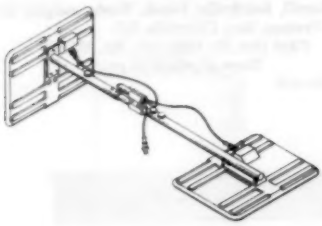
274,701
CLOSURE FOR A CONTAINER FOR CHEMICAL AND RADIOACTIVE WASTE
Leighton Burrill, Bainbridge Island, Wash., assignor to Chem-Nuclear Systems, Inc., Columbia, S.C.
Filed Dec. 15, 1981, Ser. No. 331,004
Term of patent 14 years
U.S. Cl. D9—439

274,702
DIGITAL CLOCK
Bernard Mermelstein, c/o M.Z. Berger & Co. Inc., 20 W. 37th St., New York, N.Y. 10018
Filed Mar. 15, 1982, Ser. No. 358,000
Term of patent 14 years
U.S. Cl. D10—8

274,703
DIGITAL CLOCK
Bruce C. Vogel, Scottsdale, Ariz., assignor to Amba Marketing Systems Inc., Phoenix, Ariz.
Filed Dec. 24, 1981, Ser. No. 334,436
Term of patent 14 years
U.S. Cl. D10—15

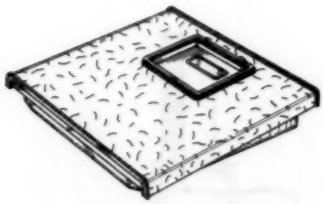


274,704
METAL DETECTOR
Charles L. Garrett, Garland, and Robert J. Podhrasky, Dallas, both of Tex., assignors to Garrett Electronics, Garland, Tex.
Filed Jan. 28, 1982, Ser. No. 343,715
Term of patent 14 years
U.S. Cl. D10—47

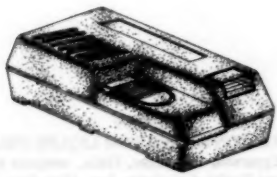


274,705
DIAL GAGE
Shingo Nishina, Kanagawa; Hiroshi Koizumi, Kanagawa; Yoshio Sanoki, Kanagawa, and Yoshikazu Kikuchi, Tochigi, all of Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan
Filed May 21, 1982, Ser. No. 380,821
Claims priority, application Japan, Nov. 24, 1981, 56-52080
Term of patent 14 years
U.S. Cl. D10—73

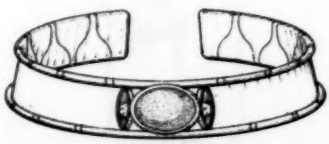
274,706
SCALE
Tynes, Albert L., Quitman, Miss., assignor to Sunbeam Corporation, Oak Brook, Ill.
Filed Mar. 16, 1982, Ser. No. 358,550
Term of patent 14 years
U.S. Cl. D10—92



274,707
CASING FOR A SIGNALING DEVICE OR SIMILAR ARTICLE
Ernest French, 117 Somerville Rd., Hornsby, N.S.W., 2077, Australia
Filed Nov. 18, 1981, Ser. No. 322,715
Term of patent 14 years
U.S. Cl. D10—104



274,708
NECKLACE
Marina Bulgari, Athens, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein
Filed Oct. 9, 1981, Ser. No. 310,430
Claims priority, application Italy, Apr. 13, 1981, 35745/81[U]
Term of patent 14 years
U.S. Cl. D11—3

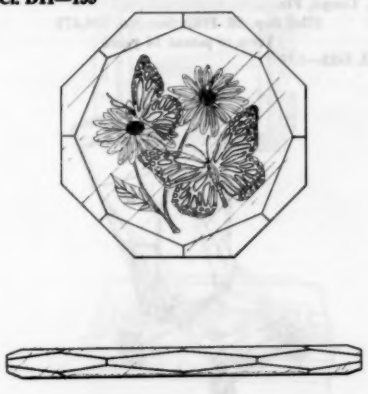


274,709
EARRING ORNAMENT
Marina Bulgari, Athens, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein
Filed Nov. 6, 1981, Ser. No. 319,034
Claims priority, application Italy, May 8, 1981, 35802/81[U]
Term of patent 14 years
U.S. Cl. D11—43

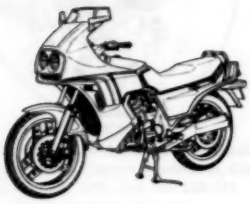
274,710
TRANSPARENT ORNAMENT WITH MANGER SCENE
George C. Sun, One Cherry Hill, Cherry Hill, N.J. 08002
Filed May 14, 1982, Ser. No. 378,084
Term of patent 14 years
U.S. Cl. D11—128

274,711
TRANSPARENT ORNAMENT WITH MICE AND MUSHROOMS
George C. Sun, One Cherry Hill, Cherry Hill, N.J. 08002
Filed May 14, 1982, Ser. No. 378,086
Term of patent 14 years
U.S. Cl. D11—134

274,712
TRANSPARENT ORNAMENT WITH BUTTERFLIES AND FLOWERS
George C. Sun, One Cherry Hill, Cherry Hill, N.J. 08002
Filed May 14, 1982, Ser. No. 378,085
Term of patent 14 years
U.S. Cl. D11—135

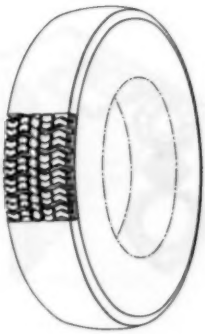


274,713
MOTORCYCLE
Minoru Morioka, Saitama, and Tetuo Ogishima, Shiki, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 9, 1981, Ser. No. 241,493
Claims priority, application Japan, Sep. 10, 1980, 55-37461
Term of patent 14 years
U.S. Cl. D12—110

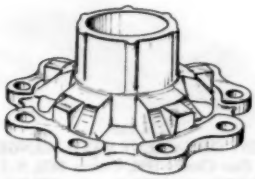


274,714
STROLLER
Richard E. Cone, Dayton, Ohio, assignor to Questor Corporation, Tampa, Fla.
Filed Sep. 28, 1981, Ser. No. 306,471
Term of patent 14 years
U.S. Cl. D12—129

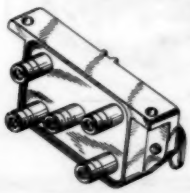
274,715
TIRE TREAD AND BUTTRESS
H. Richard Baumgardner, Wadsworth, Ohio, assignor to The Firestone Tire & Rubber Co., Akron, Ohio
Filed Mar. 15, 1982, Ser. No. 358,122
Term of patent 14 years
U.S. Cl. D12—147



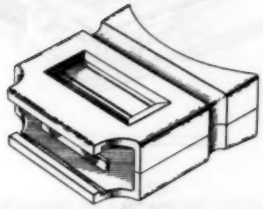
274,716
WHEEL HUB
Fritz Mahnig, Schaffhausen, Switzerland, assignor to George Fischer Ltd., Switzerland
Filed Sep. 25, 1981, Ser. No. 305,836
Term of patent 14 years
U.S. Cl. D12—207



274,717
C.A.T.V. SIGNAL SPLITTER
David F. Shu, Hoffman Estate, Ill., assignor to TDS, Inc., Elk Grove Village, Ill.
Filed Sep. 28, 1981, Ser. No. 306,001
Term of patent 14 years
U.S. Cl. D1—311

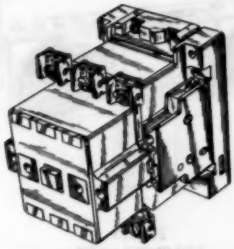


274,718
ELECTRICAL CONNECTOR COVER
Robert G. Dickie, Keswick, Canada, assignor to Northern Technologies, Ltd., Markham, Canada
Filed Mar. 29, 1982, Ser. No. 363,247
Term of patent 14 years
U.S. Cl. D13—24

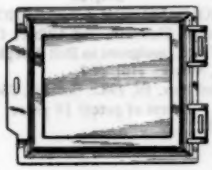


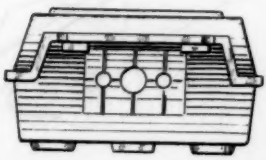
274,719
MULTI TERMINAL ELECTRICAL CONNECTOR PLUG
Albert Casciotti, Hershey, and Robert D. Hollyday, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed May 14, 1982, Ser. No. 378,036
Term of patent 14 years
U.S. Cl. D13—24

274,720
MAGNETIC SWITCH
Joachim Hannich, Amberg, and Heinz Seidenbusch, Sulzbach-Rosenberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Oct. 21, 1981, Ser. No. 313,509
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 12510
Term of patent 14 years
U.S. Cl. D13—32



274,721
PROTECTOR HOUSING FOR TELECOMMUNICATIONS EQUIPMENT OR THE LIKE
Thomas J. Smith, Bayshore, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.
Filed Jul. 8, 1982, Ser. No. 396,456
Term of patent 14 years
U.S. Cl. D13—40





274,722

COMBINED RADIO RECEIVER AND TAPE RECORDER

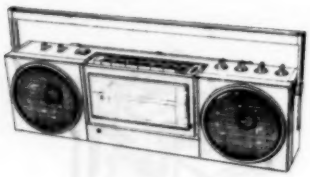
Benito Mishiro, Osaka; Kikuo Ohta, Nara, and Kunio Hoshina, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 4, 1982, Ser. No. 336,987

Claims priority, application Japan, Jul. 3, 1981, 56-29382

Term of patent 14 years

U.S. Cl. D14—5



274,723

LOUDSPEAKER

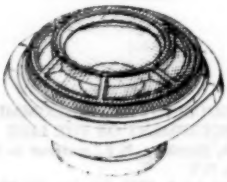
Manabu Kawachi, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1981, Ser. No. 301,574

Claims priority, application Japan, Mar. 13, 1981, 56-10425

Term of patent 14 years

U.S. Cl. D14—30



274,724

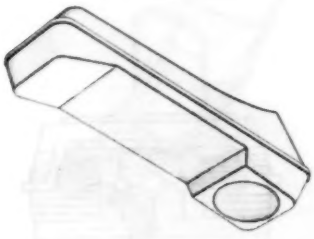
HOUSING FOR A TELEPHONE

Donald M. Genaro, Haworth, and Gilbert C. Lemke, Maplewood, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 10, 1983, Ser. No. 550,761

Term of patent 14 years

U.S. Cl. D14—53



274,725

PRINTER FOR ELECTRONIC COMPUTERS

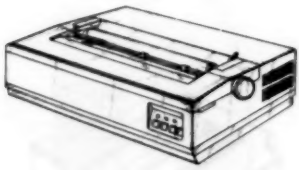
Kenzou Izaki, Chiba, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 23, 1982, Ser. No. 361,085

Claims priority, application Japan, Sep. 28, 1981, 56-42620

Term of patent 14 years

U.S. Cl. D14—100



274,726

VISUAL DISPLAY UNIT

Terence T. Caven, Beeston, England, assignor to Plessey Overseas Limited, Essex, England

Filed Jul. 22, 1981, Ser. No. 285,326

Claims priority, application United Kingdom, Feb. 18, 1981, 81998972

Term of patent 14 years

U.S. Cl. D14—113

274,727

DATA DISPLAY UNIT FOR ELECTRONIC COMPUTERS

Mikio Shibata, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

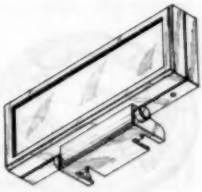
Filed Mar. 15, 1982, Ser. No. 357,863

Claims priority, application Japan, Sep. 19, 1981, 56/41253

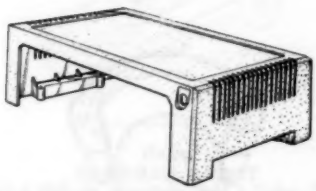
Term of patent 14 years

U.S. Cl. D14—113

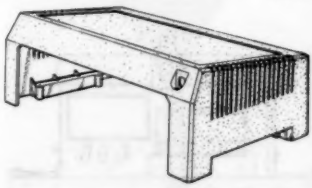
274,728
DISPLAY UNIT FOR ELECTRONIC COMPUTERS
Mikio Shibata, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Mar. 23, 1982, Ser. No. 361,084
Claims priority, application Japan, Sep. 30, 1981, 56/43066
Term of patent 14 years
U.S. Cl. D14—113



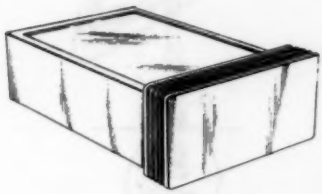
274,729
HOME COMPUTER HOUSING AND DISPLAY SUPPORT
Dean A. Hovey, Los Altos; James Sachs, Menlo Park, and Douglas R. Grundstrom, San Jose, all of Calif., assignors to Trace Systems, Inc., Palo Alto, Calif.
Filed Dec. 11, 1981, Ser. No. 329,732
Term of patent 14 years
U.S. Cl. D14—114



274,730
HOME COMPUTER HOUSING AND DISPLAY SUPPORT
Dean A. Hovey, Los Altos; James Sachs, Menlo Park; David M. Kelley, Palo Alto; Douglas R. Grundstrom, San Jose, and James R. Yurchenco, Palo Alto, all of Calif., assignors to Trace Systems, Inc., Palo Alto, Calif.
Filed Dec. 11, 1981, Ser. No. 329,733
Term of patent 14 years
U.S. Cl. D14—114



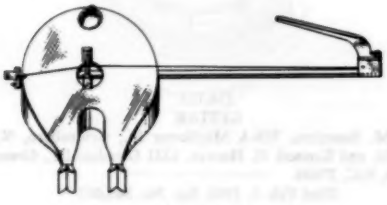
274,731
CARTRIDGE FOR A PRINTED CIRCUIT BOARD OR SIMILAR ARTICLE
Joseph Girardi, Edison, N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sep. 15, 1982, Ser. No. 418,205
Term of patent 14 years
U.S. Cl. D14—114



274,732
GUITAR
John M. Hampton, 705-A Mayflower St., Greensboro, N.C. 27403, and Kenneth H. Hoover, 1321 Glendale Dr., Greensboro, N.C. 27406
Filed Feb. 4, 1982, Ser. No. 345,602
Term of patent 14 years
U.S. Cl. D17—14

274,733
GUITAR
John M. Hampton, 705-A Mayflower St., Greensboro, N.C. 27403, and Kenneth H. Hoover, 1321 Glendale Dr., Greensboro, N.C. 27406
Filed Feb. 22, 1982, Ser. No. 351,338
Term of patent 14 years
U.S. Cl. D17—14

274,734
GUITAR OR SIMILAR INSTRUMENT
Harry A. Sowle, 3 Rivers Rd., P.O. Box 633, Carrabelle, Fla. 32322
Filed Mar. 8, 1984, Ser. No. 356,217
Term of patent 14 years
U.S. Cl. D17—14

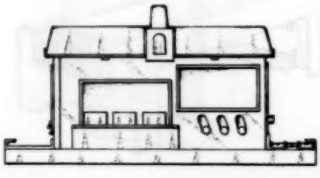


274,735
SOLID BODY ACOUSTIC GUITAR
John Caruth, 1320 Chesterton, Richardson, Tex. 75080
Filed Jun. 1, 1981, Ser. No. 269,398
Term of patent 14 years
U.S. Cl. D17—19

274,736
TOY PENDANT
Takashi Maezono, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Aug. 7, 1981, Ser. No. 290,977
Claims priority, application Japan, Feb. 9, 1981, 56-4674
Term of patent 14 years
U.S. Cl. D21—59

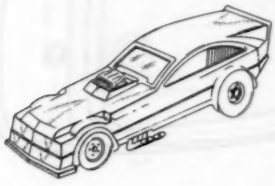
274,737
TOY RATTLE
David J. Ciganko, and Mary E. Venesa, both of East Aurora, N.Y., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 28, 1982, Ser. No. 343,410
Term of patent 14 years
U.S. Cl. D21—65

274,738
TOY BUILDING CARRYING CASE
Michael W. Nuttall, S. Pasadena, and Toshiaki Kurita, Torrance, both of Calif., assignors to Tomy Corporation, Carson, Calif.
Filed Dec. 21, 1981, Ser. No. 332,688
Term of patent 14 years
U.S. Cl. D21—114



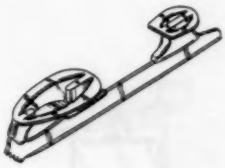
274,739
TOY TRUNK
Larry R. Nagode, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 5, 1982, Ser. No. 346,182
Term of patent 14 years
U.S. Cl. D21—121

274,740
TOY CAR
Peter M. Santaw, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 5, 1982, Ser. No. 346,165
Term of patent 14 years
U.S. Cl. D21—137



274,741
GAME BALL RACKET
Harleston J. Hall, Jr., Princeton; Drew J. Yuhas, Pennington; Frank J. Duggan, Trenton; Thomas Johnson, Hopewell, all of N.J., and Paul A. Witte, New Hope, Pa., assignors to AMF Incorporated, White Plains, N.Y.
Filed Jan. 6, 1982, Ser. No. 336,256
Term of patent 14 years
U.S. Cl. D21—212

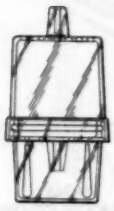
274,742
ICE SKATE
George Couture, Quebec City, Prov. of Quebec, Canada
Filed Feb. 22, 1982, Ser. No. 350,962
Claims priority, application Canada, Aug. 28, 1981, 28-08-81-2
Term of patent 14 years
U.S. Cl. D21—225



274,743
ICE SKATE GUARD
Donald Shewchuck, 170 Commander Blvd., Agincourt, Ontario, Canada M1S 3C8
Filed Mar. 4, 1982, Ser. No. 354,650
Claims priority, application Canada, Oct. 2, 1981, 02-10-81-2
Term of patent 14 years
U.S. Cl. D21—225

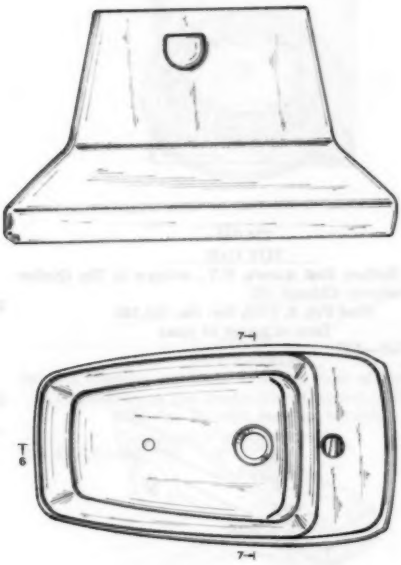
274,744
STRENGTH-BUILDING SWIM PADDLE
Michael N. Smithers, P. O. Box 142, San Luis Obispo, Calif. 93406
Filed Mar. 22, 1982, Ser. No. 360,182
Term of patent 14 years
U.S. Cl. D21—239

274,745
FILTER CARTRIDGE
Alexander Want, Edison, N.J., assignor to Lazere Financial Corporation, New York, N.Y.
Filed Sep. 10, 1981, Ser. No. 301,025
Term of patent 14 years
U.S. Cl. D23—4



274,746
SAFETY FLUSH VALVE FITTING FOR AUTOMOTIVE AIR CONDITIONER
Harrison N. Burruss, 3120 Teton Cir., Huntsville, Ala. 35810
Filed Aug. 17, 1981, Ser. No. 293,289
Term of patent 14 years
U.S. Cl. D23—21

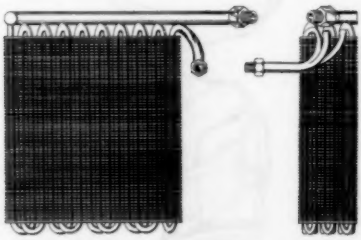
274,747
BIDET OR SIMILAR ARTICLE
Jack N. Kaiser, Danville, Ky., assignor to American Standard, Inc., New York, N.Y.
Filed Feb. 22, 1982, Ser. No. 350,774
Term of patent 14 years
U.S. Cl. D23—51



274,748
FUME VENTILATING WORK STATION FOR LABORATORIES
Roland Aberg, Taby, Sweden, assignor to A.C.C. Air Clean Co., Stockholm, Sweden
Filed May 27, 1981, Ser. No. 268,142
Term of patent 14 years
U.S. Cl. D23—151

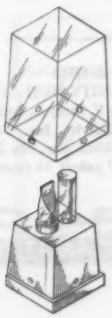
274,749
LOW PROFILE FAN
Edward L. Petermen, 26283 Old Holley Rd., Sweet Home, Oreg. 97386
Filed May 18, 1981, Ser. No. 239,426
Term of patent 14 years
U.S. Cl. D23—155

274,750
EVAPORATOR FOR AN AUTOMOTIVE AIR CONDITIONER
Shelton E. Taylor, 4112 Oakellar, Tampa, Fla. 33611
Filed Jan. 25, 1982, Ser. No. 342,597
Term of patent 14 years
U.S. Cl. D23—163



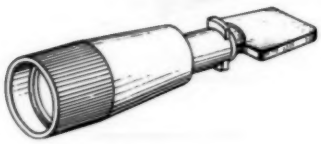
274,751
PLASMAPHERESIS AND FLUID EXCHANGE DEVICE
Richard I. Brown, Northbrook, and William Gordon, Lake Villa, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Feb. 8, 1982, Ser. No. 346,980
Term of patent 14 years
U.S. Cl. D24—1.1

274,752
PREGNANCY DIAGNOSTIC APPARATUS
David S. Byrne, Atlantic Highlands, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Aug. 18, 1983, Ser. No. 524,257
Term of patent 14 years
U.S. Cl. D24—8

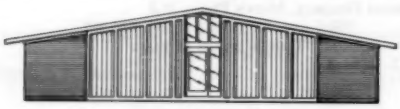


274,753
MIDDLE EAR VENTILATION TUBE
Beverly W. Armstrong, 3034 Hampton Ave., Charlotte, N.C. 28207
Filed Sep. 24, 1982, Ser. No. 422,860
Term of patent 14 years
U.S. Cl. D24—34

274,754
PORT CAP FOR MEDICAL APPARATUS
Milton P. Chernack, West Hempstead, N.Y., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.
Filed Dec. 7, 1981, Ser. No. 328,171
Term of patent 14 years
U.S. Cl. D24—56

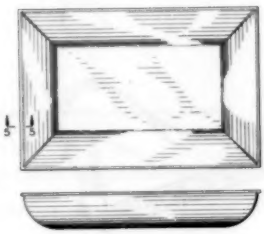


274,755
APARTMENT BUILDING
Keith E. Marty, and Martin F. Strayer, both of Columbus, Ohio, assignors to Cardinal Industries, Inc., Columbus, Ohio
Filed Jun. 1, 1982, Ser. No. 383,499
Term of patent 14 years
U.S. Cl. D25—22



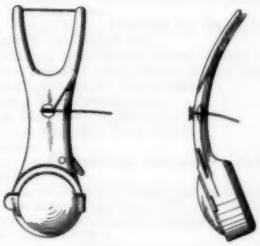
274,756
COMMUNITY BUILDING
Keith E. Marty, and Martin F. Strayer, both of Columbus, Ohio, assignors to Cardinal Industries, Inc., Columbus, Ohio
Filed Jun. 1, 1982, Ser. No. 383,500
Term of patent 14 years
U.S. Cl. D25—22

274,757
ONE-PIECE DOME CEILING WITH LIP
John E. Beaty, Sr., 107 Miami Gardens Rd., Hollywood, Fla. 33023
Filed Jun. 23, 1982, Ser. No. 392,230
Term of patent 14 years
U.S. Cl. D25—58

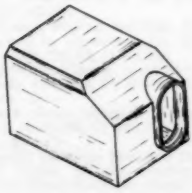


274,758
COMBINED HEAD LAMP AND BATTERY PACK THEREFOR
Shiu Shing, 3A Hammer Hill Rd., G/F, Kowloon, Hong Kong
Filed Jul. 27, 1981, Ser. No. 286,759
Claims priority, application United Kingdom, Apr. 28, 1981, 1000197
Term of patent 14 years
U.S. Cl. D26—39

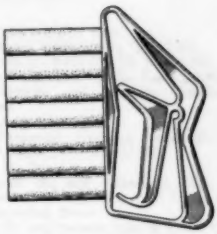
274,759
DENTAL FLOSS HOLDER
Kerry Starks, Rte. 8, Box 421, Paducah, Ky. 42001
Filed Nov. 12, 1982, Ser. No. 440,792
Term of patent 14 years
U.S. Cl. D28—64



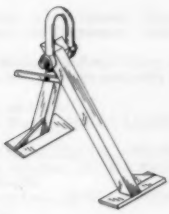
274,760
DOGHOUSE
Monte C. Henderson, 6990 Tobi Dr., Boise, Id. 83703
Filed Apr. 9, 1982, Ser. No. 367,181
Term of patent 14 years
U.S. Cl. D30—1



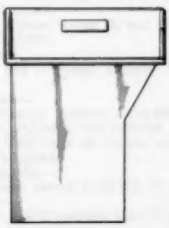
274,761
BLIND CLEANER
Jeff A. Jacobson, 22 Woodgrove, Irvine, Calif. 92714
Filed Nov. 22, 1982, Ser. No. 443,325
Term of patent 14 years
U.S. Cl. D32—52



274,762
LIFTING DEVICE
Roger L. Toffolon, 953 MacArthur Blvd., SE., Stuart, Fla. 33494
Filed Feb. 16, 1982, Ser. No. 349,061
Term of patent 14 years
U.S. Cl. D34—33



274,763
QUILL CAN
Olin H. Baker, and Robert P. Reilly, both of Madison, Ind., assignors to Meese, Inc., Madison, Ind.
Division of Ser. No. 22,707, Mar. 22, 1979. This application Sep. 24, 1982, Ser. No. 422,554
Term of patent 14 years
U.S. Cl. D34—43



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TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF JULY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Abe, Katsuo; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; Mitani, Masao; Fujimoto, Kazuyuki; and Hiratsuka, Shigetoshi, to Hitachi, Ltd. Resistor. 4,460,494, Cl. 252-512.000.

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Babcock, H. Duane, 4,459,752, Cl. 33-134.00R.
Babcock, H. Duane, to Babcock Consultants, Inc. Precision tubular length measuring system. 4,459,752, Cl. 33-134.00R.
Babcock & Wilcox Company, The: *See*—
Kaya, Azmi; and Willey, Michael S., 4,459,818, Cl. 62-201.000.
Bacardit, Juan S., to Bendiberica. Power steering device. 4,459,897, Cl. 91-375.00A.
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Schulz, Helmuth; and Bacher, Helmut, 4,460,277, Cl. 366-76.000.
Bachmann, Wolfgang; and Spahn, Dieter. Method and devices for assembly of helixes into face structures. 4,459,733, Cl. 29-433.000.
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Fahlstrom, Per A. H. H.; Back, Erik G.; Svemar, Sten C.; and Wallsten, Bruno C., 4,460,376, Cl. 44-1.00B.
Bader, Clifford J., to Burroughs Corporation. Noise cancelling system for low frequency analog recording. 4,460,929, Cl. 360-30.000.
Badesha, Santokh S.; and Smith, Thomas W., to Xerox Corporation. Process for preparation of chalcogenide alloys by coreduction of esters. 4,460,408, Cl. 75-0.50R.
Bagcraft Corporation of America: *See*—
Blamer, Robert H., 4,461,031, Cl. 383-123.000.
Bahnman, Reuben G.: *See*—
Dietz, Frank J.; and Bahnman, Reuben G., 4,460,193, Cl. 280-415.00R.
Bahr, Theodor: *See*—
Thumm, Helmut; Bahr, Theodor; and Ortner, Herbert, 4,460,132, Cl. 241-46.110.
Bailey, Cornelius E., Jr. Method and apparatus for detecting changes in lighting intensity utilizing a microprocessor. 4,460,892, Cl. 340-555.000.
Baker International Corporation: *See*—
Smith, Everett H.; and Akkerman, Neil H., 4,460,048, Cl. 166-375.000.
Baker Oil Tools, Inc.: *See*—
Berryman, William O., 4,460,041, Cl. 166-134.000.
Bowyer, Michael L., 4,460,040, Cl. 166-129.000.
Ball, David J., to Automation Industries, Inc. Sealing grommet means. 4,460,227, Cl. 339-94.00M.
Ball, James. Adjusting device for a slat blind contained in a sealed double glazed window. 4,459,778, Cl. 49-64.000.
Ballert Orthopedic Corporation: *See*—
Perser, Donald A.; and Mohn, Erich W., 4,459,980, Cl. 128-80.00E.
Ban, Itsuki. Mode changeover apparatus for magnetic recorder/player. 4,460,933, Cl. 360-106.000.
Banner, Alvin C., to Globe Tool & Engineering Company, The. Armature winding machine and method. 4,459,742, Cl. 29-597.000.
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivatives, and central nervous system controlling agents containing the carbostyril derivatives. 4,460,593, Cl. 424-258.000.
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Rialland, Jean P.; and Barbier, Jean P., 4,460,616, Cl. 426-580.000.
Barbour, William P., to DBS, Inc. Printing pressure compensating means in pump handle imprinters. 4,459,912, Cl. 101-269.000.
Barclay, John A.; Overton, William C., Jr.; and Stewart, Walter F., to United States of America, Energy. Magnetic refrigeration apparatus and method. 4,459,811, Cl. 62-3.000.
Barer, Sol J.; and Besso, Michael M., to Celanese Corporation. Microporous hollow fibers as protectants against toxic agents. 4,460,641, Cl. 428-246.000.
Barford, Eric D.; Jeffrey, Daniel J.; and Raynor, Paul A., to Jeyes Group Limited. Lavatory cleansing blocks. 4,460,490, Cl. 252-92.000.
Barkan, Edward D.: *See*—
Shepard, Howard M; Barkan, Edward D.; and Swartz, Jerome, 4,460,120, Cl. 235-472.000.
Barker, Charles E.; Cairo, Anthony C.; and Bauer, Frederick T., to Robertshaw Controls Company. Wall thermostat and the like. 4,460,125, Cl. 236-94.000.
Barlow, Alan R.; and Doroszkowski, Andrew, to Imperial Chemical Industries PLC. Coating process. 4,460,439, Cl. 204-56.00R.
Barmag Barmer Maschinenfabrik AG: *See*—
Turk, Herbert; and Schiminski, Herbert, 4,460,133, Cl. 242-18.00A.
Barndt, Richard L.; Zwiercan, Gary A.; and Trubiano, Paolo C., to National Starch and Chemical Corp. Protein-free coffee whitener and method of making same. 4,460,617, Cl. 426-609.000.
Barnea, Daniel I., to Elscint, Incorporated. Radiographic method and apparatus for the visualization of the interior of a body particularly useful for the visualization of a subject's circulatory system. 4,459,990, Cl. 128-656.000.
Barnes, Elwood E.; and Flack, Thomas L., to Mars, Inc. Coin presence sensing apparatus. 4,460,003, Cl. 133-1.00R.
Barringer, Albert J. Sealed container. 4,460,102, Cl. 220-85.00B.
Barron, William R.; and Zell, Peter E., to American Sterilizer Company. Discharge evacuation system. 4,460,387, Cl. 55-192.000.
Bartelson, Nils E.: *See*—
Andersson, Kurt G.; Axelsson, Gunnar E.; Bondesson, Stig H.; Bryngelsson, Arne H.; Flodin, Gunnar R.; and Bartelson, Nils E., 4,460,137, Cl. 244-3.270.
Bartesaghi, Angelo. Device for packing sheet-like elements. 4,460,169, Cl. 271-192.000.
Bartl, Herbert; Rudolph, Hans; and Thormer, Joachim, to Bayer Aktiengesellschaft. Crosslinking of ethylene polymers. 4,460,446, Cl. 204-159.170.
BASF Aktiengesellschaft: *See*—
Mueller, Herbert, 4,460,796, Cl. 568-617.000.
Reffert, Rudi W.; Hambrecht, Juergen; Echte, Adolf; Schuster, Hans H.; and Dreher, Hermann, 4,460,764, Cl. 528-487.000.
BASF Wyandotte Corporation: *See*—
Newkirk, David D., 4,460,486, Cl. 252-8.900.
Bassetti, Larry W.; Hooker, Ross B., III; and Kantor, Sherwood, to International Business Machines Corporation. Method and apparatus for enhancing the resolution of an electrophotographic printer. 4,460,909, Cl. 346-160.000.
Bates, David A., to Kendall Company, The. Drainage system with holding chamber. 4,460,362, Cl. 604-323.000.
Battista, Ralph N.; Groves, Quentin D.; and Tow, Jimmy, to AT&T Bell Laboratories. Adaptive signal receiving method and apparatus. 4,460,808, Cl. 179-84.0VF.
Baucom, Keith B.; and Hamon, Burrell N., to United States of America, Air Force. Method for the preparation of poly (carbonyl fluoride) oligomers. 4,460,514, Cl. 260-544.00F.
Bauer, Anton, to Braun Aktiengesellschaft. Control device for a vibrating armature motor. 4,460,854, Cl. 318-114.000.
Bauer, Frederick T.: *See*—
Barker, Charles E.; Cairo, Anthony C.; and Bauer, Frederick T., 4,460,125, Cl. 236-94.000.
Bauer, Paul, to Beru-Werk Albert Ruprecht GmbH & Co., K.G. Glow plug for internal combustion engines. 4,459,948, Cl. 123-145.00A.
Bauer, Robert, to Miles Laboratories, Inc. Ascorbate-resistant broad range glucose test composition, test device and method. 4,460,684, Cl. 435-14.000.
Baum, Jorg P.; and Schaffer, Theodor, to Verfahrenstechnik Dr.Ing. .Kurt Baum. Device for filtering dust extracted from factory buildings. 4,460,389, Cl. 55-273.000.
Baumann, George P.; and Zboray, James A., to Exxon Research and Engineering Co. High temperature gas distribution injector. 4,460,130, Cl. 239-559.000.
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Bartl, Herbert; Rudolph, Hans; and Thormer, Joachim, 4,460,446, Cl. 204-159.170.
Jautelat, Manfred; Arlt, Dieter; and Jager, Gerhard, 4,460,793, Cl. 568-405.000.
Kabbe, Hans-Joachim; Krause, Hans-Peter; and Sitt, Rudiger, 4,460,607, Cl. 424-248.500.
Lindner, Christian; and Ott, Karl-Heinz, 4,460,749, Cl. 525-310.000.
Neuray, Dieter; Margotte, Dieter; Tresper, Erhard; and Jacobs, Gunter, 4,460,752, Cl. 525-462.000.
Schundehutte, Karl H.; and Henk, Hermann, 4,460,505, Cl. 260-153.000.
Wedemeyer, Karlfried; Hagedorn, Ferdinand; and Evertz, Werner, 4,460,788, Cl. 564-412.000.
Baylot, Michel P.: *See*—
Migliarese-Caputi, Jean-Louis; Baylot, Michel P.; and Merle, Jacques G., 4,460,295, Cl. 405-303.000.

BBC Brown, Boveri & Company, Limited: *See*—
Buser, Werner; Keller, Pierre; and Munch, Walter, 4,460,869, Cl. 324-200.000.

Bear Medical Systems, Inc.: *See*—
Fry, Stanley E., 4,459,982, Cl. 128-204.230.

Beard, Stephen P.: *See*—
Meister, Jack B.; Beard, Stephen P.; and Andrews, Robert H., 4,460,881, Cl. 335-128.000.

Beavan, Stuart W., to Lever Brothers Company. Particulate detergent composition and method for cleaning fabrics. 4,460,373, Cl. 8-103.000.

Beck, Michael S., to Security Comfort Co. Inc. Shoe heel guard. 4,459,764, Cl. 36-72.00B.

Becker, Carl: *See*—
Abel, Heinz; Becker, Carl; and Schafer, Paul, 4,460,374, Cl. 8-501.000.

Beckman, Jesse W. Vehicle drive recorder. 4,460,902, Cl. 346-7.000.

Beckman, Paul: *See*—
Benedict, Robert P.; and Beckman, Paul, 4,460,802, Cl. 136-230.000.

Beecham Group Limited: *See*—
Adams, David R.; and Goudie, Alexander C., 4,460,595, Cl. 424-269.000.

Beecham Group p.l.c.: *See*—
Markwell, Roger E., 4,460,594, Cl. 424-267.000.
Nayler, John H. C., 4,460,582, Cl. 424-246.000.

Beecham Inc.: *See*—
Pavlich, Mary J., 4,460,644, Cl. 428-314.400.

Behnke, Adolph: *See*—
Hernandez, William D.; and Behnke, Adolph, 4,459,784, Cl. 51-216.0L.P.

Behnke, Thomas L., to General Steel Industries, Inc. Eccentric shaft and method of manufacture. 4,460,346, Cl. 464-179.000.

Beier, Rudolf: *See*—
Welschof, Hans-Heinrich; and Beier, Rudolf, 4,460,058, Cl. 180-258.000.

Belko, Robert P.: *See*—
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,460,795, Cl. 568-446.000.

Bell & Howell Company: *See*—
Guenther, Kenneth L.; Zemke, Edward H.; and Warden, Gerald D., 4,460,903, Cl. 346-75.000.

Bell, Oliver A., Jr.; and Gilleland, Randall C., to Colt Industries Operating Corp. Current limit system and method for electrical discharge machining apparatus. 4,460,815, Cl. 219-69.00M.

Bell Telephone Laboratories, Incorporated: *See*—
Gans, Michael J., 4,460,897, Cl. 343-754.000.

Beloit Corporation: *See*—
Frye, Kenneth G., 4,459,888, Cl. 83-507.000.

Belzil, Rolland. Shearing apparatus to cut notches at the end of pipes and the like. 4,459,886, Cl. 83-178.000.

Benaben, Patrick: *See*—
Tardy, Rene; and Benaben, Patrick, 4,460,438, Cl. 204-51.000.

Bendiberica: *See*—
Bacardit, Juan S., 4,459,897, Cl. 91-375.00A.

Bendix Corporation, The: *See*—
Burt, David L.; and Krawczyk, Gregory J., 4,460,015, Cl. 137-625.500.
Calamera, John, 4,459,849, Cl. 73-517.00B.
Cybulski, Mark J.; and Portolese, Larry A., 4,460,068, Cl. 188-71.800.

Benedict, Robert P.; and Beckman, Paul, to Westinghouse Electric Corporation; and Beckman, Paul, a part interest. Radially activated thermocouple assembly. 4,460,802, Cl. 136-230.000.

Bengtson, Darroll D.: *See*—
Murray, Jean P.; Bohn, David C.; and Bengtson, Darroll D., 4,459,857, Cl. 73-861.120.

Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., to Miles Laboratories, Inc. 6-[N-(ω-Carboxyalkyl)amino]-1,3-dimethyl-5-formamidouracils. 4,460,772, Cl. 544-311.000.

Bentley, Arthur P. Sonic pressure wave surface operated pump with extensible pumping assembly. 4,460,320, Cl. 417-240.000.

Bergles, Eduard, to Fichtel & Sachs AG. Mechanism for adjusting the position of a bicycle chain. 4,460,347, Cl. 474-82.000.

Berngruber, Walter: *See*—
Redinger, Robert; and Berngruber, Walter, 4,460,754, Cl. 526-75.000.

Bernstein, Norman B., to Analog Devices, Incorporated. Analog-to-digital converter with explicit interpolation. 4,460,891, Cl. 340-347.0AD.

Berryman, William O., to Baker Oil Tools, Inc. Subterranean well tool with pressure equalizing release. 4,460,041, Cl. 166-134.000.

Bert, Joseph E.; and Cotterman, Robert W., to GTE Products Corporation. Integrated erectable antenna system. 4,460,895, Cl. 343-713.000.

Berthold, Richard, to Sandoz Ltd. 2-Cyano-4-(2-hydroxy-3-substituted-aminopropoxy) indoles. 4,460,586, Cl. 424-250.000.

Bertin, Patrice: *See*—
Dauvergne, Jean L. R.; and Bertin, Patrice, 4,459,896, Cl. 91-375.00A.

Beru-Werk Albert Ruprecht GmbH & Co., K.G.: *See*—
Bauer, Paul, 4,459,948, Cl. 123-145.00A.

Besso, Michael M.: *See*—
Barer, Sol J.; and Besso, Michael M., 4,460,641, Cl. 428-246.000.

Beth Israel Medical Center: *See*—
Mosbach, Erwin H.; Ayengar, Narayan K. N.; and McSherry, Charles K., 4,460,509, Cl. 260-239.500.

Bettarini, Franco; Massardo, Pietro; Piccardi, Paolo; and Longoni, Angelo, to Montedison S.p.A. Method for fighting infestations by ants. 4,460,606, Cl. 424-341.000.

Bettini, John E.; and Blucher, William J., to Illinois Tool Works Inc. Fastener with head cap having a concealed edge. 4,460,300, Cl. 411-375.000.

Betts Industries, Inc.: *See*—
Johnson, Kenneth L., 4,460,805, Cl. 174-152.00G.

Beucher, Michel, to Les Cables de Lyon. Quad guide device for guiding quads to a telephone cable stranding machine. 4,459,799, Cl. 57-293.000.

Beverly, John P., to Roberts-Gordon Appliance Corp. Apparatus and method for controlling the temperature of a space. 4,460,123, Cl. 236-46.00R.

Beyreuther, Christian; and Riegel, Klaus, to Beyreuther, Christian. Breathing apparatus for reanimation of newborns. 4,459,983, Cl. 128-205.240.

Bieri, Jurg H.; and Ingraham, Thomas M., to Heliodyne, Inc. Support and organizer for components of solar heating systems and the like. 4,459,971, Cl. 126-417.000.

Bigham, Keith E. Attenuator for providing a test image from a radiation source. 4,460,832, Cl. 250-505.100.

Bildner, Carolyn. Automatic clamping and release mechanism. 4,460,195, Cl. 280-612.000.

Billing, Lars: *See*—
Wahlstrom, Olle, 4,460,301, Cl. 411-449.000.

Biolectron, Inc.: *See*—
Dugot, Richard S., 4,459,988, Cl. 128-419.00F.

Biotest-Serum Institute GmbH: *See*—
Ganshirt, Karlheinz; Walker, Wolfram H.; and Schleussner, Hans, 4,460,365, Cl. 604-408.000.

Birch, Ernest H.; and Lobato, Andres, to I.D.M. Electronics Limited. Optical slip ring. 4,460,242, Cl. 350-96.200.

Birkle, Siegfried; Stoger, Klaus; and Gehring, Johann, to Siemens Aktiengesellschaft. Apparatus for the galvanic deposition of aluminum. 4,460,447, Cl. 204-213.000.

Bistline, William R.; and Hatcher, Stephen C., to International Business Machines Corporation. Combined dynamic focus circuit flyback capacitor. 4,460,851, Cl. 315-408.000.

Black, James B., to Twin Disc, Incorporated. Marine propulsion system. 4,459,873, Cl. 74-720.000.

Black, Sivalls & Bryson: *See*—
Valerius, Michael M., 4,460,383, Cl. 55-32.000.

Blamer, Robert H., to Bagcraft Corporation of America. Tubular bag and method of making the same. 4,461,031, Cl. 383-123.000.

Blankenship, Robert W.: *See*—
Eubanks, Robert H.; and Blankenship, Robert W., 4,459,734, Cl. 29-455.00R.

Blasius, Ewald; and Nilles, Karl-Heinz, to Kernforschungszentrum Karlsruhe GmbH. Process for the extraction of cesium ions from aqueous solutions using an adduct compound in solid form comprising a macrocyclical polyether and an inorganic heteropoly acid. 4,460,474, Cl. 210-679.000.

Blatov, Valery G.: *See*—
Kapitanov, Boris A.; Blatov, Valery G.; Dmitriev, Viktor P.; Enikeev, Gumer K.; Ermilov, Mikhail A.; Soldatov, Anatoly I.; and Cheretaev, Vladimir N., 4,460,516, Cl. 261-1.000.

Blizzard, John D.; and Swihart, Terence J., to Dow Corning Corporation. Compositions producing aminofunctional silicone foams and coatings. 4,460,712, Cl. 521-92.000.

Blom, Bartholomeus W. M.: *See*—
Van Der Hoek, Jan L.; and Blom, Bartholomeus W. M., 4,460,883, Cl. 336-65.000.

Blucher, William J.: *See*—
Bettini, John E.; and Blucher, William J., 4,460,300, Cl. 411-375.000.

Blum, Gunther: *See*—
Stark, Gerhard; and Blum, Gunther, 4,460,081, Cl. 198-341.000.

Bobeck, Andrew H., to AT&T Bell Laboratories. Field access magnetic bubble memory with improved expander-detector arrangement. 4,460,976, Cl. 365-8.000.

Bobra, Yogendra: *See*—
Gee, Lubin; Cheng, Pearl; Bobra, Yogendra; and Mehta, Rustam, 4,460,982, Cl. 365-189.000.

BOC Group, Inc., The: *See*—
Steinberg, Ira H., 4,460,000, Cl. 131-296.000.

Bochen, Bernd; and Jagstaidt, Karlheinz, to General Motors Company. Clamp for fixing one or more fluid conduits. 4,460,139, Cl. 248-68.100.

Bockwinkel, Joe L.; and Pehl, Willis G., to Shakertown Corporation. Plywood-backed double course shingle panel. 4,459,788, Cl. 52-535.000.

Boden, Hellmut, to Werner & Pfleiderer. Method for encapsulating radioactive waste concentrates into non-deformable asphalt in a manner ready for ultimate disposal. 4,460,499, Cl. 252-628.000.

Boehm, Russell W.; Keelen, William R.; and Rees, Herbert, to International Business Machines Corporation. Two-shot injection molding. 4,460,534, Cl. 264-246.000.

Boehringer Ingelheim GmbH: *See*—
Hartmeier, Winfried, 4,460,686, Cl. 435-137.000.

Boehringer Ingelheim KG: *See*—
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, 4,460,581, Cl. 424-244.000.

Boehringer Mannheim GmbH: *See*—
Gloger, Manfred; Heinle, Josef; and Schlumberger, Helmut, 4,460,683, Cl. 435-10.000.

Boeing Company, The: *See*—
Ashland, Robert F., 4,460,858, Cl. 318-585.000.
Chamberlain, Michael J.; Myers, David R.; and Furlong, Donald R., 4,460,215, Cl. 297-14.000.
Elrod, Samuel D.; and Lindh, DeVere V., 4,460,657, Cl. 428-600.000.
Harris, Charles E.; and Toombs, Donnie T., Jr., 4,460,531, Cl. 264-138.000.

Boese, Dieter; and Etter, Rene, to Europaisches Laboratorium fur Molekularbiologie (EMBL). Process and device for manufacturing synthetic anhydrous calcium sulphate and pure hydrofluoric acid. 4,460,551, Cl. 423-166.000.

Bogese, Charles E., to Virginia Patent Development Corporation. Double-ended modular jack. 4,460,234, Cl. 339-128.000.

Bogucki-Land, Bogdan, to Karl Mayer Textilmaschinenfabrik GmbH. Pile fabric cutting apparatus. 4,459,724, Cl. 26-13.000.

Bohlander, Peter J.: *See*—
Browne, Colin L.; Keith, Charles H.; and Bohlander, Peter J., 4,460,001, Cl. 131-338.000.

Bohn, David C.: *See*—
Murray, Jean P.; Bohn, David C.; and Bengtson, Darroll D., 4,459,857, Cl. 73-861.120.

Boliden Aktiebolag: *See*—
Fahlstrom, Per A. H.; Back, Erik G.; Svemar, Sten C.; and Wallsten, Bruno C., 4,460,376, Cl. 44-1.00B.

Bolte, Steven B.: *See*—
Gruber, Robert J.; Julien, Paul C.; Bolte, Steven B.; and Koch, Ronald J., 4,460,672, Cl. 430-110.000.

Bondar, Henri B. Process and device for converting a periodic LF electric voltage into sound waves. 4,460,809, Cl. 179-113.000.

Bondesson, Stig H.: *See*—
Andersson, Kurt G.; Axelsson, Gunnar E.; Bondesson, Stig H.; Bryngelsson, Arne H.; Flodin, Gunnar R.; and Bartelson, Nils E., 4,460,137, Cl. 244-3.270.

Bonga, Benno, to Ateliers des Charmilles, S.A. Apparatus for orienting the wire electrode support and guide member and the machining fluid nozzle of a travelling wire EDM apparatus. 4,460,816, Cl. 219-69.00W.

Books, Jeffrey T., to Ethyl Corporation. Polyester composition. 4,460,729, Cl. 524-394.000.

Booth, John L., to Booth Manufacturing Company. Telescoping box assembly. 4,459,791, Cl. 53-290.000.

Booth Manufacturing Company: *See*—
Booth, John L., 4,459,791, Cl. 53-290.000.

Booth, Raymond H.; Monahan, Jack J.; and Schneider, Fred J., to AT&T Technologies, Inc. Methods of and apparatus for indexing a repetitively patterned strip past a plurality of work stations. 4,460,421, Cl. 156-64.000.

Borkan, William N., to Neuromed, Inc. Non-invasive multiprogrammable tissue stimulator and methods for use. 4,459,989, Cl. 128-421.000.

Bornowski, Robert M.: *See*—
Pitman, Raymond F.; and Bornowski, Robert M., 4,459,786, Cl. 52-115.000.

Borro, Giuliano, to Minnesota Mining & Manufacturing Company. Method for preparing 2-lower alkyl-substituted naphthoxazoles by way of non-toxic intermediates. 4,460,779, Cl. 548-217.000.

Bosco, John J. Retractable plumb and chalk line. 4,459,761, Cl. 33-414.000.

Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Homogeneous low melting point copper based alloys. 4,460,658, Cl. 428-606.000.

Bosnia, Omar J. Method for manufacturing a racket structure. 4,460,423, Cl. 156-185.000.

Bossen, Douglas C.; and Hsiao, Mu-Yue, to International Business Machines Corporation. Deterministic permutation algorithm. 4,461,001, Cl. 371-38.000.

Boston, Ernest B., to Phillips Petroleum Company. Production of antimony organophosphorodithioates. 4,460,511, Cl. 260-446.000.

Botez, Dan: *See*—
Connolly, John C.; and Botez, Dan, 4,461,008, Cl. 372-45.000.

Bott, John A. Vehicle article carrier. 4,460,116, Cl. 224-321.000.

Bour, Edmond H. J. P.: *See*—
Gaymans, Reinoud J.; and Bour, Edmond H. J. P., 4,460,762, Cl. 528-335.000.

Boursaud, Jack: *See*—
Paravigna, Zivko; Boursaud, Jack; and Tassart, Christian, 4,460,010, Cl. 137-259.000.

Bowie, Robert A.: *See*—
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Bowyer, Michael L., to Baker Oil Tools, Inc. Equalizing annulus valve. 4,460,040, Cl. 166-129.000.

Boyd, Walter K. Pressure roller for roofing machines. 4,460,433, Cl. 156-574.000.

Boyles, Elmo N. Cam-actuated disc brake. 4,460,069, Cl. 188-72.700.

BP Chimie S.A.: *See*—
Thiersault, Jean-Paul; Senez, Alain; and Vidal, Jean L., 4,460,750, Cl. 525-333.800.

Brachert, Thomas, to Dr. Ing. h.c.F. Porsche AG. Control installation for an exhaust gas feedback system. 4,459,965, Cl. 123-571.000.

Brackelmanns, Norbert W.; and Hulstrunk, William, to RCA Corporation. Fast switching transistor. 4,460,913, Cl. 357-34.000.

Brackmann, Warren A.; and Hrboticky, Karel, to Rothmans of Pall Mall Canada Limited. Cigarette maker feeder. 4,459,999, Cl. 131-109.00R.

Bradshaw, John, to Glaxo Group Limited. Nitrovinyl aziridine derivative. 4,460,506, Cl. 260-239.00E.

Brahmbhatt, Dhaval J., to Honeywell Inc. Memory cell. 4,460,979, Cl. 365-182.000.

Brahmst, Dieter: *See*—
Rugenstein, Rolf K. A.; Brahmst, Dieter; and Lippert, Wolfgang, 4,460,088, Cl. 206-494.000.

Bramberger, Hubert: *See*—
Wiesinger, Horst; Granitz, Fritz; Hargassner, Reinhard; and Bramberger, Hubert, 4,460,031, Cl. 164-150.000.

Branchetti, Italo: *See*—
Roca-Nierga, Manuel; Branchetti, Italo; and Forapianti, Mauro, 4,459,956, Cl. 123-373.000.

Brandt, Arnold W.; Fox, David H.; and Lawton, Richard H., to Ford Motor Company. Ignition system. 4,459,968, Cl. 123-643.000.

Braschel, Volker: *See*—
Leiber, Heinz; Roller, Dieter; and Braschel, Volker, 4,460,963, Cl. 364-426.000.

Braun Aktiengesellschaft: *See*—
Bauer, Anton, 4,460,854, Cl. 318-114.000.

Braun, Kurt; and Eschmann, Friedrich, to Didier-Werke AG. System for preventing excess pressure in a gap between a double-shell structure of a blast heating apparatus. 4,460,335, Cl. 432-247.000.

Brekle, Axel: *See*—
Lautenschlager, Hans-Heiner; Welter, Andre; Hilboll, Gerd; Winkelmann, Johannes; Prop, Gerrit; Brekle, Axel; and Zierenberg, Ottfried, 4,460,598, Cl. 424-273.00R.

Brenot, Claude, to Superba. Steam ironing press. 4,459,770, Cl. 38-34.000.

Breslow, Jeffrey D.: *See*—
Jaworski, Eugene; Breslow, Jeffrey D.; Sakoda, Tom K.; and Disko, Harry, 4,459,776, Cl. 446-462.000.

Bricot, Claude: *See*—
Volleau, Patrick; Chaboche, Michel; and Bricot, Claude, 4,460,252, Cl. 350-486.000.

Bridgestone Cycle Co., Ltd.: *See*—
Ishibashi, Hideyuki; and Takamiya, Kikuzo, 4,460,191, Cl. 280-287.000.
Takamiya, Kikuzo; and Ishibashi, Hideyuki, 4,460,192, Cl. 280-287.000.

Bridgwater, Jon D.: *See*—
Darnell, James P., II; and Bridgwater, Jon D., 4,460,097, Cl. 211-189.000.

Brisken, Axel F.: *See*—
Smith, Lowell S.; and Brisken, Axel F., 4,460,841, Cl. 310-334.000.

Brissette, Ronald N., to Rockwell International Corporation. Square sealing member for slip-type drive shaft. 4,460,182, Cl. 277-12.000.

Brissette, Ronald N., to Rockwell International Corporation. Resilient sealing member for slip-type drive shaft. 4,460,183, Cl. 277-12.000.

Bristol-Myers Company: *See*—
Ricci, Albert A., 4,460,096, Cl. 211-184.000.

British Broadcasting Corporation: *See*—
Devereux, Victor G., 4,460,925, Cl. 358-312.000.

British Gas Corporation: *See*—
Cox, Robert W.; Janikowski, Herbert E.; Walker, David L.; and Hands, David, 4,460,533, Cl. 264-236.000.

Britton, Walter. Cable splitter. 4,459,745, Cl. 30-90.400.

Brown, Martin K.; and Richard, Kenny S., to RCA Corporation. Rigid cathode support structure for an in-line electron gun assembly. 4,460,845, Cl. 313-417.000.

Brown, Vincent B.; and Schlacks, Robert F., to Methode Electronics, Inc. Cover for chip carrier socket. 4,460,223, Cl. 339-14.00R.

Brown, Vincent B.; and Schlacks, Robert F., to Methode Electronics, Inc. Contacts for chip carrier socket. 4,460,237, Cl. 339-176.0MP.

Browne, Colin L.; Keith, Charles H.; and Bohlander, Peter J., to Celanese Corporation. Process for preparing compound filter. 4,460,001, Cl. 131-338.000.

Brunelle, Daniel J., to General Electric Company. Phase transfer catalysts. 4,460,778, Cl. 546-304.000.

Bruning, Paul, to Westfalia Separator AG. Centrifuge drum for clarifying and/or separating liquids. 4,460,352, Cl. 494-70.000.

Bryngelsson, Arne H.: *See*—
Andersson, Kurt G.; Axelsson, Gunnar E.; Bondesson, Stig H.; Bryngelsson, Arne H.; Flodin, Gunnar R.; and Bartelson, Nils E., 4,460,137, Cl. 244-3.270.

BTM Corporation: *See*—
Sawdon, Edwin G., 4,459,735, Cl. 29-509.000.

Buchholz, Herbert F.: *See*—
Hardesty, Donald E.; and Buchholz, Herbert F., 4,459,762, Cl. 34-9.000.

Buchmann, Kurt, to Fried. Krupp Gesellschaft mit beschrankter Haftung. System for exchanging cutting tools. 4,459,738, Cl. 29-568.000.

Buchy, Francois: *See*—
Graciet, Michel; Romann, Annick; and Buchy, Francois, 4,460,624, Cl. 427-102.000.

Buckler, Robert T.: *See*—
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,460,772, Cl. 544-311.000.

Bucksbaum, Arnold M.: *See*—
Diesch, Bradford J.; and Bucksbaum, Arnold M., 4,460,814, Cl. 219-10.55F.

Bucksch, Manfred, to Zahnradfabrik Friedrichshafen, A.G. Lubricating arrangement for planet-gear bearing. 4,459,869, Cl. 74-467.000.

Buckwalter, Brian L.; and LaHann, Thomas R., to Procter & Gamble Company, The. Urea derivatives. 4,460,602, Cl. 424-322.000.

Budzich, Mieczyslaw; and Fitz, Forest G., Jr., to Nassau Recycle Corporation. Method and apparatus for severing stranded cable. 4,459,892, Cl. 83-880.000.

Buehler Ltd.: *See*—
Zimmer, Robert E., 4,459,785, Cl. 51-237.00R.

Buhse, Ulf H.: *See*—
Schwarz, Henning; and Buhse, Ulf H., 4,461,021, Cl. 381-2.000.

Bunch, J. David, to Olin Corporation. Mold-in-place sabot projectile. 4,459,894, Cl. 86-1.00R.

Burandt, Corliss O., to Investment Rarities, Incorporated. Valve actuating apparatus utilizing a multi-profiled cam unit for controlling internal combustion engines. 4,459,946, Cl. 123-90.160.

Burchett, Clive J., to Vickers Limited. Marine tether anchoring device. 4,459,933, Cl. 114-297.000.

Burd, John F.: *See*—
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,460,772, Cl. 544-311.000.

Burdette, Douglas C., Jr. Disposable dental floss applicator system. 4,460,002, Cl. 132-91.000.

Burkhardt, Juurgen: *See*—
Huber, Peter; Kaufmann, Rudolf; and Burkhardt, Juurgen, 4,460,726, Cl. 524-114.000.

Burkhart, Christopher W., to Smith & Denison. Gas separation chamber and portable leak detection system. 4,459,844, Cl. 73-40.700.

Bürkner, Wolfgang H., to Carl Schenck AG. Apparatus for aligning chips during the manufacture of strandboards. 4,460,082, Cl. 198-382.000.

Burnham, Robert D.; Streifer, William; and Scifres, Donald R., to Xerox Corporation. Injection lasers with short active regions. 4,461,007, Cl. 372-45.000.

Burroughs Corporation: *See*—
Bader, Clifford J., 4,460,929, Cl. 360-30.000.
Stopper, Herbert, 4,460,224, Cl. 339-17.00F.
Wonsowicz, Casimir J., 4,460,416, Cl. 148-174.000.

Burt, David L.; and Krawczyk, Gregory J., to Bendix Corporation, The. Three-way control valve. 4,460,015, Cl. 137-625.500.

Burton, Robert; and Parma, Glenn. Machine for fabricating driveshafts. 4,459,727, Cl. 29-238.000.

Busby, Bruce, to Sony Corporation. Direct digital to digital sampling rate conversion, method and apparatus. 4,460,890, Cl. 340-347.0DD.

Buscall, Richard; and Corner, Terence, to Imperial Chemical Industries PLC. Particulate dispersions. 4,460,732, Cl. 524-460.000.

Buser, Rudolph G.; Nomiyama, Neal T.; and Dunn, Aubrey J., to United States of America, Army. Method of integrated optical system. 4,460,424, Cl. 156-242.000.

Buser, Werner; Keller, Pierre; and Munch, Walter, to BBC Brown, Boveri & Company, Limited. Determining the state of the surface of a moving body using eddy currents to obtain first and second runout profiles of the body. 4,460,869, Cl. 324-200.000.

Busuco Engineering, Inc.: *See*—
Deters, Paul M., 4,460,620, Cl. 427-58.000.

Buttazzoni, Bernard. Joint prosthesis. 4,459,708, Cl. 3-1.910.

Butts, Gary E.: *See*—
Shaw, Douglas R.; Spisak, John F.; Downey, Jerome P.; and Butts, Gary E., 4,460,459, Cl. 209-9.000.

Bynum, Byron G.; Gray, Randall C.; and Jarrett, Robert B., to Motorola, Inc. Variable temperature coefficient level shifting circuit and method. 4,460,865, Cl. 323-313.000.

Byrum, Barney L. Y-Gauge angle measuring device. 4,459,748, Cl. 33-1.00N.

C. A. Rubio Company, The: *See*—
Rodger, Edward F., 4,460,005, Cl. 134-104.000.

Cabell, Paul C.; and Kimmich, Robert L., to Hesse Corporation, The. Beverage vehicle bulkhead and method of constructing same. 4,459,821, Cl. 62-239.000.

Cabot Corporation: *See*—
Herchenroeder, Robert B., 4,460,542, Cl. 420-443.000.
Stallings, John P., 4,459,707, Cl. 2-209.000.

Cairo, Anthony C.: *See*—
Barker, Charles E.; Cairo, Anthony C.; and Bauer, Frederick T., 4,460,125, Cl. 236-94.000.

Calaceto, Ralph R. Compact venturi-type scrubber. 4,460,517, Cl. 261-23.00R.

Calamera, John, to Bendix Corporation, The. Compact force measuring system. 4,459,849, Cl. 73-517.00B.

Calanchi, Massimo, to Eurand S.p.A. Process for preparing microcapsules in a liquid vehicle. 4,460,563, Cl. 424-35.000.

Calgon Corporation: *See*—
Costello, Christine A.; and Matz, Gary F., 4,460,477, Cl. 210-701.000.

Callahan, Michael. Azimuth and elevation control system. 4,460,943, Cl. 362-276.000.

Camco, Incorporated: *See*—
Pringle, Ronald E., 4,460,046, Cl. 166-317.000.

Cameron Iron Works, Inc.: *See*—
Turlak, Robert J.; Williams, Bolie C., III; and Schaeper, Gary R., 4,460,150, Cl. 251-1.00B.
Williams, Bolie C., III; and Church, Richard M., Jr., 4,460,151, Cl. 251-1.00B.

Camino Laboratories: *See*—
Foreman, Richard L., 4,459,993, Cl. 128-706.000.

Campbell, Henry F.; Scholz, Thomas H.; and Douglas, George H., to William H. Rorer, Inc. 1-Aryl-4-hydrazinyl-s-triazin-2-ones. 4,460,585, Cl. 424-249.000.

Campbell, Patricia S.; and Chandrasekaran, Santosh K., to ALZA Corporation. Percutaneous absorption enhancer dispenser for use in coadministering drug and percutaneous absorption enhancer. 4,460,372, Cl. 604-897.000.

Candlin, John P.; Kelland, John W.; and Law, Peter L., to Imperial Chemical Industries PLC. Drying process and product. 4,460,700, Cl. 502-104.000.

Canniff, Ronald J.; and Lin, Gordon K., to AT&T Bell Laboratories. Dual tone multifrequency and dial pulse receiver. 4,460,806, Cl. 179-18.0EB.

Canon Kabushiki Kaisha: *See*—
Katayama, Hirohiko, 4,461,023, Cl. 381-43.000.
Kawai, Tohru; and Masunaga, Makoto, 4,460,253, Cl. 354-446.000.
Kishimoto, Juji, 4,460,928, Cl. 360-4.000.
Mashimo, Yukio; Iwashita, Tomonori; Ichiyanagi, Toshikazu; Fukahori, Hidehiko; Fujino, Masahisa; and Sunouchi, Akio, 4,460,265, Cl. 354-448.000.
Ogawa, Hiroshi, 4,460,267, Cl. 355-3.0DD.
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,460,669, Cl. 430-57.000.
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,460,670, Cl. 430-57.000.
Shimizu, Seiichi, 4,460,245, Cl. 350-253.000.
Tsunekawa, Tokuichi; Hosoe, Kazuya; and Masunaga, Makoto, 4,460,836, Cl. 307-311.000.

Cariello, Frank; and Kremer, Ross A., to Mobil Oil Corporation. Beneficiation of ores. 4,460,460, Cl. 209-166.000.

Carl F. Petersen I/S: *See*—
Olsen, Per, 4,460,204, Cl. 292-356.000.

Carl Schenck AG.: *See*—
Burkner, Wolfgang H., 4,460,082, Cl. 198-382.000.

Carlson, William G.: *See*—
Gupta, Tapan K.; Carlson, William G.; and Sweetana, Andrew S., 4,460,497, Cl. 252-518.000.

Carlson, William J., to Automated Industrial Systems, Inc. Strip stacker. 4,460,305, Cl. 414-108.000.

Carlsson, Torsten: *See*—
Mases, Per E.; Lundquist, Gunnar; Nyqvist, Harry; and Carlsson, Torsten, 4,460,014, Cl. 137-614.180.

Carpino, Louis A.; and Segev, David, to Research Corporation. Process for the synthesis of peptides utilizing thioxanthylmethyloxycarbonyl dioxides. 4,460,501, Cl. 260-112.00R.

Carre, Jean-Jacques: *See*—
Meyer, Yves; and Carre, Jean-Jacques, 4,460,070, Cl. 188-73.100.

Carrier Corporation: *See*—
Michael, John E.; and Flatt, Larry D., 4,459,917, Cl. 165-151.000.
Plunkett, Francis P., 4,460,310, Cl. 415-26.000.

Carter, Russell P., Jr.; Lim, In C.; and Reinert, Gerard E., to Mobay Chemical Corporation. Polycarbonate compositions having low gloss values. 4,460,733, Cl. 524-493.000.

Carthew, Maximilian K.: *See*—
Robson, John; and Carthew, Maximilian K., 4,460,331, Cl. 432-72.000.

Cartner, Jack O. Ditcher head assembly for cleaning ditches. 4,459,767, Cl. 37-81.000.

Caruso, Anthony M. Impact-detonated time delay fuse. 4,459,914, Cl. 102-204.000.

Carville, Donna B., to Dow Chemical Company, The. Catalyst for epoxide polymerization. 4,460,703, Cl. 502-155.000.

Casada, Edwin I. Step-ladder work bench. 4,460,063, Cl. 182-116.000.

Casciani, Robert V., to Sandoz, Inc. Process for preparing alkoxylates containing primary amine functions. 4,460,789, Cl. 564-504.000.

Case Western Reserve University: *See*—
Ko, Wen-Hsiung; Fung, Cliff D. J.; and Shen, Wei-Jiun, 4,459,856, Cl. 73-754.000.

Casper, James A. Denture analyzer. 4,460,339, Cl. 433-72.000.

Caterpillar Tractor Co.: *See*—
Kohler, Ramon C.; and Eichorst, John H., Jr., 4,459,876, Cl. 74-788.000.

Cauthron, Grover L. Animal spraying apparatus. 4,459,942, Cl. 119-159.000.

Cavalier Corporation: *See*—
Lindsey, James C., 4,460,107, Cl. 221-67.000.

Cavill, Barry R.; and Dodgen, David F., to International Business Machines Corporation. Print head motor control with stop distance compensation. 4,460,968, Cl. 364-519.000.

CEAG Verfahrenstechnik GmbH: *See*—
Winter, Karl, 4,460,466, Cl. 210-274.000.

Celanese Corporation: *See*—
Barer, Sol J.; and Besso, Michael M., 4,460,641, Cl. 428-246.000.
Browne, Colin L.; Keith, Charles H.; and Bohlander, Peter J., 4,460,001, Cl. 131-338.000.
Froix, Michael F., 4,460,735, Cl. 524-537.000.
Froix, Michael F.; and Trouw, Norman, 4,460,736, Cl. 524-539.000.
Keith, Charles H., 4,460,647, Cl. 428-369.000.
Stuetz, Dagobert E., 4,460,708, Cl. 502-426.000.

Century 21 Pollution Control, Inc.: *See*—
Diachuk, Wolodymyr, 4,460,386, Cl. 55-92.000.

Cerberus AG: *See*—
Settanni, Richard; and Avery, Ronald G., 4,460,829, Cl. 250-342.000.

Cerroni, Manlio. Recovery of cardboards from the commercial waste. 4,460,131, Cl. 241-19.000.

Cervelle, Claude M. H.; and Cervelle, Madeleine, to Cervelle, Claude Marie Henri. Pharmaceutical composition for topical use based on a

total extract of *Hedysarum fructescens willd.* 4,460,578, Cl. 424-195.000.

Cervelle, Claude Marie Henri: *See—*
Cervelle, Claude M. H.; and Cervelle, Madeleine, 4,460,578, Cl. 424-195.000.

Cervelle, Madeleine: *See—*
Cervelle, Claude M. H.; and Cervelle, Madeleine, 4,460,578, Cl. 424-195.000.

CGEE Alsthom: *See—*
Gelin, Claude, 4,460,235, Cl. 339-154.00R.

Chaboche, Michel: *See—*
Volleau, Patrick; Chaboche, Michel; and Bricot, Claude, 4,460,252, Cl. 350-486.000.

Chadshay, Roman, to Combustion Engineering, Inc. Externally adjustable pipe orifice assembly. 4,459,922, Cl. 110-265.000.

Chalmin, Jean-Pierre; and Doherty, John, Jr., to Texas Instruments Incorporated. Double throw valve. 4,460,124, Cl. 236-48.00R.

Chamberlain Manufacturing Corporation: *See—*
Tsunemura, Kazuo; Iha, Kiyoshi; and Janiszewski, Anthony T., 4,460,030, Cl. 160-35.000.

Chamberlain, Michael J.; Myers, David R.; and Furlong, Donald R., to Boeing Company, The. Folding seat assembly. 4,460,215, Cl. 297-14.000.

Champion International Corporation: *See—*
Hain, Paul O.; and Lepisto, J. George, 4,460,091, Cl. 206-621.000.

Champion Spark Plug Company: *See—*
Englehardt, Clyde R., 4,460,847, Cl. 315-58.000.

Chan, Alexius C.; Wheeler, Phillip L.; and Chandler, Lloyd H., to Southern California Edison Company, Inc. Luminaire shield. 4,460,945, Cl. 362-294.000.

Chan, David C. K., to Chevron Research Company. Diphenoxy ether formamide plant-growth regulator. 4,460,399, Cl. 71-070.000.

Chan, David C. K., to Chevron Research Company. 1-(2'-Haloalkyl)-amidomethyl-substituted acetanilide fungicides. 4,460,603, Cl. 424-324.000.

Chance, Glenn G.; and Kovensky, William. Intermediate weight drill string member. 4,460,202, Cl. 285-333.000.

Chandler, Lloyd H.: *See—*
Chan, Alexius C.; Wheeler, Phillip L.; and Chandler, Lloyd H., 4,460,945, Cl. 362-294.000.

Chandrasekaran, Santosh K.: *See—*
Campbell, Patricia S.; and Chandrasekaran, Santosh K., 4,460,372, Cl. 604-897.000.

Chappell, Barbara A.; Chappell, Terry I.; and Woodall, Jerry M., to International Business Machines Corporation. Heterojunction semiconductor. 4,460,910, Cl. 357-22.000.

Chappell, Terry I.: *See—*
Chappell, Barbara A.; Chappell, Terry I.; and Woodall, Jerry M., 4,460,910, Cl. 357-22.000.

Charlebois, Leonard J.; and Huzarik, Fred A., to Northern Telecom Limited. Optical cable and cable pulling attachment assemblies. 4,460,159, Cl. 254-134.30R.

Charmat, Robert. Separation of accumulated deposits from alcoholic beverages by freezing. 4,460,608, Cl. 426-11.000.

Charron, William, to Manville Service Corporation. Paperboard tray forming machine. 4,460,349, Cl. 493-163.000.

Chatani, Michio: *See—*
Takematsu, Tetsuo; Segawa, Hirozo; Miura, Takamaro; Ataka, Toshiei; Chatani, Michio; and Nakamura, Akira, 4,460,403, Cl. 71-93.000.

Chatfield, Glen F. Cam controlled reciprocating piston device. 4,459,945, Cl. 123-56.00C.

Chemische Werke Huls AG: *See—*
Hofmann, Peter, 4,460,510, Cl. 260-410.90R.

Chemplex Company: *See—*
Adur, Ashok M.; Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,460,632, Cl. 428-35.000.
Adur, Ashok M.; Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,460,745, Cl. 525-74.000.

Chen, Franklin M. C.; and Jones, Archie L., to Personal Products Company. Pressure sensitive hot melt adhesive for sanitary products. 4,460,364, Cl. 604-387.000.

Chen, Pi-Fuay; Rohde, Frederick W.; and Seemuller, William W., to United States of America, Army. Image spectrum analyzer for cartographic feature extraction. 4,460,969, Cl. 364-727.000.

Cheng, Pearl: *See—*
Gee, Lubin; Cheng, Pearl; Bobra, Yogendra; and Mehta, Rustam, 4,460,982, Cl. 365-189.000.

Cheretaev, Vladimir N.: *See—*
Kapitanov, Boris A.; Blatov, Valery G.; Dmitriev, Viktor P.; Enikeev, Gumer K.; Ermilov, Mikhail A.; Soldatov, Anatoly I.; and Cheretaev, Vladimir N., 4,460,516, Cl. 261-1.000.

Chevron Research Company: *See—*
Chan, David C. K., 4,460,399, Cl. 71-070.000.
Chan, David C. K., 4,460,603, Cl. 424-324.000.
Elson, Thomas D.; and Millhone, Ralph S., 4,460,045, Cl. 166-278.000.
Gibson, Kirk R.; Houston, Robert J.; Hughes, Thomas R.; and Jacobson, Robert L., 4,460,457, Cl. 208-139.000.
Hutchison, S. O., 4,459,731, Cl. 29-405.000.
Porter, Luther T., 4,460,044, Cl. 166-252.000.

Chi, Frank K.; and Stark, Gary L., to Dow Corning Corporation. Fiber reinforced glass matrix composites. 4,460,639, Cl. 428-224.000.

Chi, Frank K.; and Stark, Gary L., to Dow Corning Corporation. Fiber reinforced glass matrix composites. 4,460,640, Cl. 428-224.000.

Chiba, Toshiyuki: *See—*
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,460,583, Cl. 424-246.000.

Chiesa, Marco: *See—*
Chiesa, Matteo; and Chiesa, Marco, 4,460,158, Cl. 254-124.000.

Chiesa, Matteo; and Chiesa, Marco. Lift for mopeds and motorcycles. 4,460,158, Cl. 254-124.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermes, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari nee Debreczy, Lelle; and David, Agoston, 4,460,771, Cl. 544-282.000.

Chisso Corporation: *See—*
Sato, Akihiro; Tachibana, Masami; Uwai, Toshihiro; Matsuda, Kenji; and Higuchi, Yoshiharu, 4,460,757, Cl. 526-114.000.

Chivari, Ilie. Shaft coupling. 4,460,345, Cl. 464-69.000.

Christensen, Inc.: *See—*
Jurgens: Rainer; and Rathkamp, Hermann, 4,460,053, Cl. 175-329.000.

Christian Senning Verpackungsautomaten: *See—*
Rugenstein, Rolf K. A.; Brahmst, Dieter; and Lippert, Wolfgang, 4,460,088, Cl. 206-494.000.

Christiansen, Tage: *See—*
Kristiansen, Bjarne; Christiansen, Tage; Jensen, Poul F.; Pedersen, Bent; Kjaer, Jens B.; Kristensen, Kjeld; Jensen, Svend O.; Lindstroem, Poul; and Kjaer, Bjarne, 4,460,609, Cl. 426-39.000.

Christopher, Lauren A.; Reitmeier, Glenn A.; Smith, Terrence R.; and Stroile, Christopher H., to RCA Corporation. Window-scanned memory. 4,460,958, Cl. 364-200.000.

Chubachi, Noriyoshi; and Kushibiki, Junichi. Acoustic microscope using line-focus acoustic beam. 4,459,852, Cl. 73-606.000.

Chung, Shiau-Ta, to Upjohn Company, The. Streptomyces plasmid prophage pUC13. 4,460,691, Cl. 435-235.000.

Church, Richard M., Jr.: *See—*
Williams, Bolie C., III; and Church, Richard M., Jr., 4,460,151, Cl. 251-1.00B.

Chynoweth, Lawrence L.; and Gordon, Conrad J., to Cross Company, The. Transfer machine control. 4,460,966, Cl. 364-468.000.

Ciba-Geigy Corporation: *See—*
Abel, Heinz; Becker, Carl; and Schafer, Paul, 4,460,374, Cl. 8-501.000.
Cooke, Thomas W., 4,460,791, Cl. 568-45.000.
Iqbal, Abul; Lienhard, Paul; and Pugin, Andre, 4,460,768, Cl. 548-105.000.
Kleiner, Eduard K.; Cooke, Thomas W.; and Falk, Robert A., 4,460,480, Cl. 252-8.050.
Ostermayer, Franz; and Zimmermann, Markus, 4,460,580, Cl. 424-232.000.
Reinehr, Dieter; and Pfeifer, Josef, 4,460,790, Cl. 564-511.000.
Renfroe, Harris B., 4,460,777, Cl. 546-273.000.
Strasilla, Dieter; Meindl, Hubert; Moldovanyi, Laszlo; and Fearnley, Charles, 4,460,567, Cl. 424-70.000.
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Tobler, Hans; and Fory, Werner, 4,460,400, Cl. 71-88.000.
Vlattas, Isidoros, 4,460,508, Cl. 260-245.600.
Vlattas, Isidoros, 4,460,587, Cl. 424-250.000.

Cilderman, Janis J.: *See—*
Yasuda, Kentaro; Saxer, Albert J.; and Cilderman, Janis J., 4,459,754, Cl. 33-137.00R.

Cirincione, Thomas J., to Electro-Nucleonics, Inc. Fluid loading and dispensing device. 4,459,864, Cl. 73-863.320.

Citizen Watch Co.: *See—*
Kanno, Fumio, 4,460,282, Cl. 368-157.000.

CKD Praha, oborovy podnik: *See—*
Hyanova, Blanka; and Novotny, Jiri, 4,459,850, Cl. 73-587.000.

Clamens, Henri, to Societe Nationale Elf Aquitaine. Installation for testing a well and a process for use thereof. 4,460,038, Cl. 166-66.000.

Clardy, Michael S.: *See—*
Cochran, Charles D.; Clardy, Michael S.; and Kroske, William B., 4,459,839, Cl. 72-412.000.

Clarion Co., Ltd.: *See—*
Ida, Yasuhiro, 4,461,034, Cl. 455-161.000.

Clee, Douglas. Solar steam generating and distribution system. 4,459,970, Cl. 126-415.000.

Clei, Alain. Process for producing hybrid circuits with integrated capacitors and resistors and circuits obtained by this process. 4,460,938, Cl. 361-411.000.

Coal Industry (Patents) Limited: *See—*
McCaffrey, David J. A.; and Jones, William D., 4,460,476, Cl. 210-689.000.

Coates, David A.: *See—*
Smith, Rory J. M.; Sykes, Brenda M.; Terry, Roger S.; Coates, David A.; and Gower, Philip B., 4,459,706, Cl. 2-195.000.

Cobb, William R.; and Wehner, Dennis J., to Schroeder Brothers Corporation. Toggle type temporary roof support for mining machinery. 4,460,294, Cl. 405-290.000.

Cochran, Charles D.; Clardy, Michael S.; and Kroske, William B., to FTZ Industries, Inc. Crimping tool. 4,459,839, Cl. 72-412.000.

Cohen, Leonard G., to AT&T Bell Laboratories. Telecommunication system with fiberguide signal filtering. 4,460,241, Cl. 350-96.200.

Cohen, Milton J. Fluid dispensing device. 4,460,357, Cl. 604-238.000.

Cohen, Sherman E.: *See—*
Ramazzotti, Dario J.; and Cohen, Sherman E., 4,460,140, Cl. 248-75.000.
Colanzi, Franco; and Vignotto, Angelo, to RIV-SKF Officine di Villar Perosa S.p.A. Seal assembly comprising two lips, one of which is axial and the other radial, and a labyrinth. 4,460,184, Cl. 277-35.000.
Cole, Carey S.; and Noble, William B., to Rockwell International Corporation. Split prismatic annunciator. 4,460,244, Cl. 350-112.000.
Coleman, James P.; and Hallcher, Richard C., to Monsanto Company. Metal and acid catalysis in sorbic acid preparation. 4,460,787, Cl. 562-599.000.
Collins, Theodore H.: *See—*
Fillmore, Francis L.; Wampler, David, Jr.; and Collins, Theodore H., 4,459,862, Cl. 73-862.010.
Coloplast A/S: *See—*
Poulsen, Finn; Samuelsen, Peter; and Johannesson, Niels O., 4,460,392, Cl. 55-385.00C.
Colson, Roger A.: *See—*
Waanders, Jan W.; van Heek, Herman F.; Colson, Roger A.; and Perduijn, David J., 4,460,842, Cl. 310-338.000.
Colt Industries Operating Corp.: *See—*
Bell, Oliver A., Jr.; and Gilleland, Randall C., 4,460,815, Cl. 219-69.00M.
Columbus Show Case Company, The: *See—*
Vermillion, Eugene F., 4,459,790, Cl. 52-764.000.
Combustion Engineering, Inc.: *See—*
Chadshay, Roman, 4,459,922, Cl. 110-265.000.
Commissariat a l'Energie Atomique: *See—*
Allemand, Robert; Laval, Michel; and Parot, Pierre, 4,460,830, Cl. 250-370.000.
Moreau, Claude; Francois, Daniel; Vertut, Jean; Marchal, Paul; and Streiff, Gerard, 4,460,302, Cl. 414-5.000.
Compagnie Francaise des Petroles: *See—*
Migliarese-Caputi, Jean-Louis; Baylot, Michel P.; and Merle, Jacques G., 4,460,295, Cl. 405-303.000.
Compagnie Francaise d'Etudes et de Construction "Technip": *See—*
Kaiser, Victor; Heck, Gerard; and Lepetit, Philippe, 4,460,396, Cl. 62-28.000.
Concept Anaylsis Corporation: *See—*
Glance, Patrick M., 4,460,205, Cl. 293-120.000.
Condon, Duane R., to Condon Technologies, Inc. Sewer and drain plug. 4,460,019, Cl. 138-90.000.
Condon Technologies, Inc.: *See—*
Condon, Duane R., 4,460,019, Cl. 138-90.000.
Conforti, Frederick J., to Pittway Corporation. Battery charging flashlight circuit. 4,460,863, Cl. 320-59.000.
Conley, Richard B.: *See—*
Somerville, Alvis J.; Conley, Richard B.; and Truitt, Robert B., 4,460,358, Cl. 604-250.000.
Conners, Ron; and McCormick, John, to Hubbard, Lafayette R. Indicating device for use in a device for measuring and indicating changes in resistance of a living body. 4,459,995, Cl. 128-734.000.
Connolly, John C.; and Botez, Dan, to RCA Corporation. Terraced heterostructure semiconductor laser. 4,461,008, Cl. 372-45.000.
Conoco Inc.: *See—*
Convers, Ronald J.; and Owens, Robert M., 4,460,699, Cl. 502-84.000.
Conrad, Helmut; and Schmidt, Reinhard, to Schmidt, Reinhard. Device for mounting an antenna element on an antenna supporting spar. 4,460,900, Cl. 343-880.000.
Conradty GmbH & Co. Metallelektroden KG: *See—*
Koziol, Konrad; and Wenk, Erich, 4,460,450, Cl. 204-290.00F.
Consortium fur Elektrochemische Industrie GmbH: *See—*
Haberle, Norman; and Eberle, Otto, 4,460,782, Cl. 548-547.000.
Contemporary, Inc.: *See—*
Kanzelberger, James C., 4,459,772, Cl. 40-152.100.
Control Data Corporation: *See—*
Hester, Richard E., 4,460,873, Cl. 330-259.000.
Convers, Ronald J.; and Owens, Robert M., to Conoco Inc. Fixed bed catalyst for oxychlorination. 4,460,699, Cl. 502-84.000.
Cook, Anthony; and Winters, Robert P., to Interlake, Inc. Removable hatch for blast furnace iron through hood. 4,460,165, Cl. 266-158.000.
Cooke, Thomas W., to Ciba-Geigy Corporation. Oil recovery by fluorochemical surfactant waterflooding. 4,460,791, Cl. 568-45.000.
Cooke, Thomas W.: *See—*
Kleiner, Eduard K.; Cooke, Thomas W.; and Falk, Robert A., 4,460,480, Cl. 252-8.050.
Cornell, Richard R. Method for making moldings using a fixed shaping die. 4,460,532, Cl. 264-163.000.
Corner, Terence: *See—*
Buscall, Richard; and Corner, Terence, 4,460,732, Cl. 524-460.000.
Corry, David B., to Otto-Simon Carves Limited. Larry car for a coking oven battery. 4,460,437, Cl. 202-262.000.
Coscia, Charles M.; and Wirick, W. Raymond, to D. L. Auld Company, The. Apparatus for manufacturing foil shapes having a cast plastic cap. 4,460,429, Cl. 156-384.000.
Costello, Christine A.; and Matz, Gary F., to Calgon Corporation. Use of a carboxylic functional polyampholyte to inhibit the precipitation and deposit of scale in aqueous systems. 4,460,477, Cl. 210-701.000.
Cosyns, Jean: *See—*
Deschamps, Andre; Cosyns, Jean; and Le Page, Jean-Francois, 4,460,553, Cl. 423-219.000.
Cotterman, Robert W.: *See—*
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Cound, Cary D.; and Vivona, Joseph A., to American Home Products Corp. Aerosol can evacuator and compactor. 4,459,906, Cl. 100-45.000.
Couper, William R. D.: *See—*
Ritchie, Duncan; Mills, John R.; and Couper, William R. D., 4,460,166, Cl. 266-228.000.
Cox, Jim R. Safety latch for hinged lid. 4,460,105, Cl. 220-335.000.
Cox, Robert W.; Janikowski, Herbert E.; Walker, David L.; and Hands, David, to British Gas Corporation; and Rubber & Plastics Research Assoc. of G. Britain. Apparatus and method for the heat treatment of materials. 4,460,533, Cl. 264-236.000.
Crain, N. Robert; and Hardison, Robert P., to Radiant Technology Corporation. Infrared furnace with muffle. 4,460,821, Cl. 219-388.000.
Crawford, Wheeler C.: *See—*
Sweeney, William M.; Sung, Rodney L.; and Crawford, Wheeler C., 4,460,379, Cl. 44-56.000.
Creusot-Loire: *See—*
Stef, Claude, 4,459,918, Cl. 105-157.00R.
Croseck, Hans-Henning; and Jung, Rolf, to Lacis-Werke AG. Press for moldings. 4,460,326, Cl. 425-411.000.
Cross Company, The: *See—*
Chynoweth, Lawrence L.; and Gordon, Conrad J., 4,460,966, Cl. 364-468.000.
Crostack, Horst A. Method and device for the localization and analysis of sound emissions. 4,459,851, Cl. 73-587.000.
Crouch, Michael D. Apparatus for controlled reduction in temperature and preservation of embryos in a cryogenic state. 4,459,825, Cl. 62-404.000.
Cruchon, Jean C.: *See—*
Fouillet, Jean; and Cruchon, Jean C., 4,460,878, Cl. 333-207.000.
Cummins Engine Company, Inc.: *See—*
Kasting, Edward W., 4,459,950, Cl. 123-195.00A.
Lauterbach, Jerre F.; and Schlamadinger, Hans J., 4,460,284, Cl. 384-126.000.
Curley, Joseph M.: *See—*
Mittal, Faquir C.; and Curley, Joseph M., 4,460,350, Cl. 493-412.000.
Curry, Eugene L.: *See—*
Ward, Ernest M.; Curry, Eugene L.; and Newton, Richard J., 4,461,005, Cl. 372-10.000.
Curtin, Daniel J., to Atlantic Richfield Company. Membrane distillation method. 4,460,473, Cl. 210-640.000.
Curtis Instruments, Inc.: *See—*
Finger, Eugene P., 4,460,870, Cl. 324-429.000.
Curtiss-Wright Corporation: *See—*
De Feo, Angelo; and Hosek, William, 4,460,037, Cl. 165-76.000.
Cushing, David E.: *See—*
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Cuylits, Jacques: *See—*
Lemaire, Emmanuel; De Ro, Michel; and Cuylits, Jacques, 4,459,919, Cl. 105-169.000.
Cwik, Norbert L., to Quaker Industries, Inc. Dual purpose bracket. 4,459,920, Cl. 108-107.000.
Cybulski, Mark J.; and Portolese, Larry A., to Bendix Corporation, The. Disc brake and positioning device therefor. 4,460,068, Cl. 188-71.800.
D. L. Auld Company, The: *See—*
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Daicel Chemical Industries, Ltd.: *See—*
Ohtake, Etsuo; and Higuchi, Akihiko, 4,460,411, Cl. 106-183.000.
Daikin Kogyo Co., Ltd.: *See—*
Enjo, Naonori; Aomi, Hideki; Harada, Yuko; and Noguchi, Masahiro, 4,459,810, Cl. 60-651.000.
Daimler-Benz Aktiengesellschaft: *See—*
Weiger, Gunter; Schwerdt, Paul; and Hirn, Helmut, 4,460,840, Cl. 310-328.000.
Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See—*
Shoji, Yukito, 4,460,727, Cl. 524-215.000.
D'Ambra, Anthony F.: *See—*
Richard, Armand C.; Gayton, Michael A.; and D'Ambra, Anthony F., 4,459,829, Cl. 63-12.000.
Damrow, Paul A.; and Tsang, Floris Y., to Dow Chemical Company, The. Molybdenum-coated aluminum cathodes for alkali metal/sulfur battery cells. 4,460,662, Cl. 429-104.000.
Danville, Carlos R. Pigmented peroxide and polyester compositions. 4,460,719, Cl. 523-508.000.
Darmenton, Patrick: *See—*
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Darnell, James P., II; and Bridgwater, Jon D., to Hallmark Cards Incorporated. Adjustable store fixture system. 4,460,097, Cl. 211-189.000.
Data General Corporation: *See—*
McClary, Elmer R., 4,460,970, Cl. 364-761.000.
Datta, Amitava: *See—*
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,460,658, Cl. 428-606.000.
Dauvergne, Jean L. R.; and Bertin, Patrice, to Valeo. Hydraulic distributor devices. 4,459,896, Cl. 91-375.00A.

David, Agoston: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermes, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari nee Debreczy, Lelle; and David, Agoston, 4,460,771, Cl. 544-282.000.
David, Hugo: *See*—
Savrda, Jaroslav; and David, Hugo, 4,460,503, Cl. 260-112.50R.
Davis, Richard A., to PPG Industries, Inc. Tubular glass fiber package and method. 4,460,086, Cl. 206-389.000.
Davis, William E., Sr. Log splitting device. 4,460,027, Cl. 144-194.000.
Davy-Loewy Limited: *See*—
Holton, James A.; and Inman, James C., 4,459,889, Cl. 83-597.000.
DBS, Inc.: *See*—
Barbour, William P., 4,459,912, Cl. 101-269.000.
Deckert, Clinton L.; Jenkins, Jon A.; and Wilson, Larry L., to Imed Corporation. Drop controller. 4,460,353, Cl. 604-31.000.
Decowski, Stanley J., Jr.: *See*—
Schmidt, Robert C., Jr.; Decowski, Stanley J., Jr.; and Puletti, Paul P., 4,460,728, Cl. 524-271.000.
DeCristofaro, Nicholas J.: *See*—
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,460,658, Cl. 428-606.000.
Deeb, Donald Joseph: *See*—
Kalil, Dennis G. S., 4,460,377, Cl. 44-40.000.
Deere & Company: *See*—
LaBouff, Gary A., 4,459,900, Cl. 92-189.000.
Obadal, Richard D., 4,460,168, Cl. 267-140.100.
Penfold, Garn F.; and Rabe, David L., 4,459,798, Cl. 56-341.000.
De Feo, Angelo; and Hosek, William, to Curtiss-Wright Corporation. Tube construction for fluidized bed combustor. 4,460,037, Cl. 165-76.000.
DeGraw, Joseph I.; Kelly, Lawrence F.; and Sirotnak, Francis M., to SRI International. 8,10-Dideazaminopterins. 4,460,591, Cl. 424-251.000.
Dehaene, Jean P., to Thomson-CSF. Transmitter and receiver for transmitting digital signals. 4,461,012, Cl. 375-62.000.
de Langre, Bruno: *See*—
Fourre, Remy D.; and de Langre, Bruno, 4,460,996, Cl. 371-6.000.
DeMarco, Richard E.; Hopkins, David; and McVicar, Walter D., to Westvaco Corporation. Core plug. 4,460,087, Cl. 206-415.000.
Dempster Systems Inc.: *See*—
Durant, John A.; and Ratledge, R. Houston, 4,460,307, Cl. 414-525.000R.
Demuth, Hans; and Gruber, Walter, to Sulzer Brothers, Limited. Catcher and a method of operating a gripper projectile catcher. 4,460,021, Cl. 139-185.000.
Dennison Manufacturing Company: *See*—
Abber, Herman, 4,460,371, Cl. 604-897.000.
Derby, Robert L.; Hall, Richard H.; and Young, Howard L., to Dow Chemical Company, The. Synthetic resinous polymer containing biologically active organic material. 4,460,572, Cl. 424-78.000.
Derckx, Henricus A. J. M. Device for twisting a packing wrapping. 4,459,792, Cl. 53-370.000.
Derks, Pierre L. L. M.; and Van Herwijnen, Gerardus, to U.S. Philips Corporation. Method for transporting and depositing viscous materials. 4,460,619, Cl. 427-57.000.
De Ro, Michel: *See*—
Lemaire, Emmanuel; De Ro, Michel; and Cuylits, Jacques, 4,459,919, Cl. 105-169.000.
Deschamps, Andre; Cosyns, Jean; and Le Page, Jean-Francois, to Institut Francais du Petrole. Process for the hydrodesulfurization of natural gas containing organic sulfur compounds and oxygen. 4,460,553, Cl. 423-219.000.
Deters, Paul M., to Bussco Engineering, Inc. Insulated electrical connector and method of making same. 4,460,620, Cl. 427-58.000.
Devalois, Serge; Hersant, Thierry; Goursat, Albert G.; and Weisang, Francois, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process and installation for protecting a jet of molten metal for casting. 4,460,409, Cl. 75-96.000.
Development Engineering and Associates: *See*—
O'Donnell, John F., 4,460,285, Cl. 384-152.000.
Devereux, Victor G., to British Broadcasting Corporation. Method and apparatus for deriving a PAL color television signal corresponding to any desired field in an 8-field PAL sequence from one stored field or picture of a PAL signal. 4,460,925, Cl. 358-312.000.
DeVries, Adrian J., to Zenith Radio Corporation. Narrow focus compensating transducer for surface acoustic wave filter. 4,460,995, Cl. 310-313.00R.
Dewsberry, Roland: *See*—
Jones, John C.; Pates, Anthony R.; Dewsberry, Roland; and Ryan, Paul A., 4,460,645, Cl. 428-323.000.
Dexter Corporation, The: *See*—
Stevens, William P.; and Orefice, Claudio, 4,460,643, Cl. 428-284.000.
Dexter, Fred A., to United States of America, Navy. Phanton computer gating system. 4,459,935, Cl. 114-340.000.
d'Hinterland, Lucien D.; Normier, Geard; Pinel, Anne-Marie; and Durand, Jacques, to Pierre Fabre S.A. Vaccinal complex containing a specific antigen and vaccine containing it. 4,460,575, Cl. 424-92.000.
Diachuk, Wolodymyr, to Century 21 Pollution Control, Inc. Method of separating foreign matter from a gas. 4,460,386, Cl. 55-92.000.
Dickerson, Gary R.: *See*—
Dziedzic, Edward; Dickerson, Gary R.; and Eppinger, David P., 4,459,722, Cl. 24-122.600.
Dickinson, Johanne C.; and Frey, William A., to Du Pont de Nemours, E. I., and Company. Method for the removal of interfering substances, including caffeine, in theophylline assays. 4,460,695, Cl. 436-533.000.
Didier-Werke AG: *See*—
Braun, Kurt; and Eschmann, Friedrich, 4,460,335, Cl. 432-247.000.
Diesch, Bradford J.; and Bucksbaum, Arnold M., to Amana Refrigeration, Inc. Oven antenna probe for distributing energy in microwave. 4,460,814, Cl. 219-10.55F.
Diesel Kiki Company, Ltd.: *See*—
Terada, Tomohiko; and Komada, Hideaki, 4,459,959, Cl. 123-446.000.
Dietl, Werner: *See*—
Perchthaler, Heinz; Syrowatka, Rupert; and Dietl, Werner, 4,460,461, Cl. 210-104.000.
Dietz, Frank J.; and Bahnman, Reuben G., to Autotran Swather Limited. Pull type swather assembly and mounting therefor. 4,460,193, Cl. 280-415.00R.
Diffracto Ltd.: *See*—
Pryor, Timothy R., 4,460,826, Cl. 250-227.000.
Dimino, William. Wine bar. 4,460,221, Cl. 312-277.000.
Dinkler, Leonard R.; and Pensabene, Saverio F. Coated substrate, preparation thereof, and use thereof. 4,460,666, Cl. 429-236.000.
Diosady, Levente L.: *See*—
Rubin, Leon J.; Diosady, Levente L.; and Phillips, Colin R., 4,460,504, Cl. 260-123.500.
DiPasquale, David A.; and Hammer, James J., to Philadelphia Gear Corporation. Hand pump with automatic lock-out. 4,460,152, Cl. 251-26.000.
Di Pietro, Raffaele; Paggini, Alberto; and Lagana', Vincenzo, to Snamprogetti S.p.A. Process for the production of a "fuel grade" mixture of methanol and higher alcohols. 4,460,378, Cl. 44-54.000.
Disko, Harry: *See*—
Jaworski, Eugene; Breslow, Jeffrey D.; Sakoda, Tom K.; and Disko, Harry, 4,459,776, Cl. 446-462.000.
Dmitriev, Viktor P.: *See*—
Kapitanov, Boris A.; Blatov, Valery G.; Dmitriev, Viktor P.; Enikeev, Gumer K.; Ermilov, Mikhail A.; Soldatov, Anatoly I.; and Cheretaev, Vladimir N., 4,460,516, Cl. 261-1.000.
Dobrovolny, Pierre, to Zenith Radio Corporation. Integrated single balanced mixer/oscillator with slot and hybrid coupler. 4,461,040, Cl. 455-327.000.
Dobrovolny, Pierre, to Zenith Radio Corporation. Integrated RF receiver/waveguide. 4,461,041, Cl. 455-328.000.
Docherty, Andrew J. P.: *See*—
Sanders, Johan P. M.; and Docherty, Andrew J. P., 4,460,688, Cl. 435-172.300.
Dr. Ing. h.c.F. Porsche AG: *See*—
Brachert, Thomas, 4,459,965, Cl. 123-571.000.
Dr. Ing. H.C.F. Porsche Aktiengesellschaft: *See*—
Peter, Dietmar, 4,460,206, Cl. 293-132.000.
Dr. Johannes Heidenhain GmbH: *See*—
Affa, Alfred, 4,459,750, Cl. 33-125.00C.
Nelle, Guenther, 4,459,751, Cl. 33-125.00C.
Dodge, Robert J., to Pennwalt Corporation. Apparatus for increasing directivity of a sound source. 4,460,061, Cl. 181-175.000.
Dodgen, David F.: *See*—
Cavill, Barry R.; and Dodgen, David F., 4,460,968, Cl. 364-519.000.
Doherty, John, Jr.: *See*—
Chalmin, Jean-Pierre; and Doherty, John, Jr., 4,460,124, Cl. 236-48.00R.
Dolata, Hans; Meyle, Werner; Kelbert, Adam; and Nitschmann, Karl, to Stihl, Andreas. Saw chain for power saw. 4,459,890, Cl. 83-834.000.
Dombach, Kevin R., to Armstrong World Industries, Inc. Tile orientation apparatus. 4,460,304, Cl. 414-33.000.
Domning, William E., to Dow Chemical Company, The. Expanded metal as more efficient form of silver cathode for electrolytic reduction of polychloropicolinate anions. 4,460,441, Cl. 204-73.00A.
Donaldson Company, Inc.: *See*—
Alseth, Steven M.; Gauer, Daniel S.; and Sullivan, Bruce M., 4,460,390, Cl. 55-323.000.
Donath, Gerhard, to Kraftwerk Union Aktiengesellschaft. Electromagnetic filter. 4,460,464, Cl. 210-223.000.
Donlevy, Timothy J.: *See*—
Goodfellow, Anthony E. B.; Kennemer, James C.; and Donlevy, Timothy J., 4,460,119, Cl. 229-68.00R.
Dorman Smith Fuses Limited: *See*—
Gratton, Arthur D.; McGhie, Terence V.; Whelan, Robert C.; and Peeters, Josephus B., 4,460,888, Cl. 337-290.000.
Dorn, Russell J.: *See*—
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Doroszkowski, Andrew: *See*—
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Dorsch, Norman: *See*—
Schiller, August; and Dorsch, Norman, 4,460,761, Cl. 528-18.000.
Doryokuro Kakunenryo Kaihatsu Jigyodan: *See*—
Kinugasa, Manabu; and Kaneko, Hiromitsu, 4,460,522, Cl. 264-0.500.
Sasaki, Noriaki, 4,460,398, Cl. 65-327.000.
Douglas, George H.: *See*—
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Douya, Kouichi: *See*—
Kihara, Junji; Watabe, Keiji; Douya, Kouichi; Nakamura, Kazumoto; and Takeuchi, Shouzo, 4,459,842, Cl. 73-7.000.

Dow Chemical Company, The: *See—*
Carville, Donna B., 4,460,703, Cl. 502-155.000.
Damrow, Paul A.; and Tang, Floris Y., 4,460,662, Cl. 429-104.000.
Derby, Robert L.; Hall, Richard H.; and Young, Howard L., 4,460,572, Cl. 424-78.000.
Domning, William E., 4,460,441, Cl. 204-73.00A.
Hoffman, Dwight K.; Harris, Robert F.; Tefertiller, Nancy B.; and Rains, Randall C., 4,460,715, Cl. 521-137.000.
Keith, Earl K., 4,460,407, Cl. 75-0.50C.
Keskkula, Henno; Maass, Donald A.; and McCreedy, Kathleen M., 4,460,744, Cl. 525-71.000.
Schuetz, James E.; and Keskey, William H., 4,460,029, Cl. 152-359.000.
Wolcott, Duane K., 4,460,448, Cl. 204-266.000.

Dow Corning Corporation: *See—*
Blizzard, John D.; and Swihart, Terence J., 4,460,712, Cl. 521-92.000.
Chi, Frank K.; and Stark, Gary L., 4,460,639, Cl. 428-224.000.
Chi, Frank K.; and Stark, Gary L., 4,460,640, Cl. 428-224.000.
Haluska, Loren A., 4,460,638, Cl. 428-224.000.
Lee, Chi-long; and Spells, Sherwood, 4,460,713, Cl. 521-122.000.
Lomas, Arnold W., 4,460,493, Cl. 252-321.000.

Dow, Warren S.: *See—*
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Downey, Jerome P.: *See—*
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Drackett Company, The: *See—*
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Dragerwerk AG: *See—*
Leichnitz, Kurt, 4,460,544, Cl. 422-59.000.

Dragerwerk A.G.: *See—*
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Dreher, Hermann: *See—*
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Dresser Industries, Inc.: *See—*
Winkelbauer, Howard M.; Petrak, Daniel R.; Kloeb, Thomas R.; and Wang, Ke-Chin, 4,460,528, Cl. 264-65.000.

Driggers, Robert H. Stove roller. 4,459,732, Cl. 29-426.300.

Dubic, Michael G.: *See—*
Arribau, Jorge O.; Dorn, Russell J.; and Dubic, Michael G., 4,460,276, Cl. 366-13.000.

Ducati, Umberto, to Hydrometal S.p.A. Hydrometallurgical method for recovering metal materials from spent lead-acid storage batteries. 4,460,442, Cl. 204-114.000.

Ducros, Luc; Navarro, Roger; and Kaeser, Charles, to Pierre Fabre S.A. Device for the distribution of two pasty substances in regulable proportions. 4,460,109, Cl. 222-94.000.

Dufour, Daniel L.; and Holtrop, James S., to Monsanto Company. Polyblends of thermoplastic copolyetheresters, styrene-maleic anhydride polymers, acrylonitrile-butadiene-styrene polymers, and nitrile rubbers. 4,460,741, Cl. 525-64.000.

Dugot, Richard S., to Biolectron, Inc. Electrical stimulating apparatus. 4,459,988, Cl. 128-419.00F.

Dumas, Samuel R. Automatic apparatus for positioning footballs for kicking. 4,460,173, Cl. 273-55.00B.

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Dickinson, Johanne C.; and Frey, William A., 4,460,695, Cl. 436-533.000.
Gruetzmacher, Robert R.; and Munger, Stanley H., 4,460,675, Cl. 430-300.000.
Haney, Douglas M.; and Lott, John W., 4,460,427, Cl. 156-303.000.
Jacobson, Howard W., 4,460,655, Cl. 428-530.000.
Levitt, George, 4,460,404, Cl. 71-93.000.
Milford, George N., Jr., 4,460,763, Cl. 528-336.000.
Sauers, Richard F., 4,460,401, Cl. 71-92.000.
Schadt, Frank L., III, 4,460,679, Cl. 430-409.000.

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Durant, John A.; and Ratledge, R. Houston, to Dempster Systems Inc. Refuse collection vehicle compaction apparatus. 4,460,307, Cl. 414-525.00R.

Durham, La Moyne W. Apparatus and method for testing containers. 4,459,843, Cl. 73-37.000.

Durham, Robert L.; Henderson, Carl R.; and Allison, Richard C., II, to Agritec, Inc. Process for containment of liquids as solids or semisolids. 4,460,292, Cl. 405-129.000.

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Moberg, Sigurd M.; and Swift, Allan W., 4,460,203, Cl. 292-318.000.

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Montferme, Daniel, 4,460,212, Cl. 294-115.000.

E. R. Squibb & Sons, Inc.: *See—*
Karanewsky, Donald S., 4,460,579, Cl. 424-200.000.

E-Z Trail, Inc.: *See—*
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Greivenkamp, John E., Jr.; Lambeth, David N.; and Meyer, James W., 4,460,259, Cl. 354-403.000.
Henry, James W.; and Mitchell, Thomas A., 4,460,921, Cl. 358-107.000.

Eaton Corporation: *See—*
Kolze, Lawrence A., 4,460,006, Cl. 137-62.000.

Eberle, Otto: *See—*
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Rama, Lord; and Eccles, David, 4,460,103, Cl. 220-254.000.

Echols, Charles R. Tool for installing freeze plugs. 4,459,730, Cl. 29-275.000.

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Reffert, Rudi W.; Hambrecht, Juergen; Echte, Adolf; Schuster, Hans H.; and Dreher, Hermann, 4,460,764, Cl. 528-487.000.

Eckhardt, Walter: *See—*
Keller, Josef; and Eckhardt, Walter, 4,460,431, Cl. 156-515.000.

ECM Motor Co.: *See—*
Ulicny, Dennis J., 4,460,838, Cl. 310-76.000.

Ecodyne Corporation: *See—*
Stackhouse, David W., 4,460,521, Cl. 261-111.000.

Edwards, H. Marvin: *See—*
Singleton, Ogle R.; and Edwards, H. Marvin, 4,460,541, Cl. 419-42.000.

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Eguchi, Yasukata, to Janome Sewing Machine Co. Ltd. Hemming by zigzag sewing machine. 4,459,928, Cl. 112-268.100.

Eheim, Franz, to Robert Bosch GmbH. Fuel injection pump. 4,459,957, Cl. 123-387.000.

Ehnstrom, Lars K. J., to Alfa Laval AB. Fermentation method. 4,460,687, Cl. 435-161.000.

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Kohler, Ramon C.; and Eichorst, John H., Jr., 4,459,876, Cl. 74-788.000.

Eilers, Jacobus; and Stork, Willem H. J., to Shell Oil Company. Process for reducing ramsbottom carbon test of long residues. 4,460,456, Cl. 208-89.000.

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Aulich, Hubert; Eisenrith, Karl-Heinz; Schulze, Friedrich-Wilhelm; and Urbach, Hans-Peter, 4,460,556, Cl. 423-350.000.

Ekstrom, Olof: *See—*
Hok, Bertil; and Ekstrom, Olof, 4,459,841, Cl. 73-4.00R.

Elajo Invest Aktiebolag: *See—*
Svensson, Conny, 4,460,141, Cl. 248-222.100.

Electro-Nucleonics, Inc.: *See—*
Cirincione, Thomas J., 4,459,864, Cl. 73-863.320.

Electro-Petroleum, Inc.: *See—*
Titus, Charles H., 4,461,010, Cl. 373-108.000.

Elgin Sweeper Company: *See—*
Hildebrand, Donald L.; and Martinez, Mario J., 4,460,186, Cl. 280-92.000.

Elks, William J. Proximity alarm. 4,460,889, Cl. 340-61.000.

Ellis, Donald G.: *See—*
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Elrod, Samuel D.; and Lindh, DeVere V., to Boeing Company, The. Thinning control in superplastic metal forming. 4,460,657, Cl. 428-600.000.

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Barnea, Daniel I., 4,459,990, Cl. 128-656.000.

Elser, Wilhelm; and Munzer, Manfred, to Rohm GmbH Chemische Fabrik. Alcohol-soluble printing ink or varnish. 4,460,721, Cl. 524-35.000.

Elson, Thomas D.; and Millhone, Ralph S., to Chevron Research Company. Foam gravel packing in highly deviated wells. 4,460,045, Cl. 166-278.000.

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Hargraves, David P., 4,459,819, Cl. 62-212.000.

Emmons, William D.; and Lavelle, Joseph A., to Rohm and Haas Company. Method of coating and impregnating concrete substrates, and products obtained thereby. 4,460,625, Cl. 427-136.000.

Empson, Kenneth G., to Garbe Iron Works, Inc. Telescoping uncoupling lever for railway car couplers. 4,460,099, Cl. 213-159.000.

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Kotsanis, Constantine, 4,459,978, Cl. 128-20.000.

Energy Conversion Devices, Inc.: *See—*
Yu, Terry T.; and Yen, Mei-Rong, 4,460,678, Cl. 430-346.000.

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Norton, John P., 4,459,812, Cl. 62-75.000.

Englehardt, Clyde R., to Champion Spark Plug Company. Spark plug. 4,460,847, Cl. 315-58.000.

Enikeev, Gumer K.: *See*—
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Enjo, Naonori; Aomi, Hideki; Harada, Yuko; and Noguchi, Masahiro, to Daikin Kogyo Co., Ltd. Working fluids for use with rankine cycle. 4,459,810, Cl. 60-651.000.
ens Bio Logicals inc.: *See*—
Ogilvie, Kelvin K., 4,460,690, Cl. 435-235.000.
Ensinger, James W.; and Hendrickson, Melvin C., to Zenith Electronics Corporation. Memory select system for an STV decoder. 4,460,922, Cl. 358-122.000.
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Ericsson, Sylve J. D. Rail designed for use in the construction of a stencil frame. 4,459,911, Cl. 101-127.100.
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Kapitanov, Boris A.; Blatov, Valery G.; Dmitriev, Viktor P.; Enikeev, Gumer K.; Ermilov, Mikhail A.; Soldatov, Anatoly I.; and Cheretaev, Vladimir N., 4,460,516, Cl. 261-1.000.
Errede, Louis A.; Stoesz, James D.; and Upton, Jenny, to Minnesota Mining and Manufacturing Company. Water-swellable composite sheet of microfibers of PTFE and hydrophilic absorptive particles. 4,460,642, Cl. 428-283.000.
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Helander, Pertti J., 4,460,110, Cl. 222-504.000.
Esnard, Miguel H., to Roberts, Alan K. Razor blade apparatus and method. 4,459,744, Cl. 30-49.000.
Espinosa, Fausto L.; and Alejandre, Ramon R. Electronic speed and slowing down control with intrinsic safety. 4,460,862, Cl. 318-741.000.
Estrada, Paul, to Sylver National Industries, Inc. Method and articles for repairing gypsum wallboard. 4,460,420, Cl. 156-64.000.
Ethyl Corporation: *See*—
Books, Jeffrey T., 4,460,729, Cl. 524-394.000.
Etter, Rene: *See*—
Boese, Dieter; and Etter, Rene, 4,460,551, Cl. 423-166.000.
Eubanks, Robert H.; and Blankenship, Robert W., to Williams Steel Industries, Inc. Method of making fruit storage bin. 4,459,734, Cl. 29-455.00R.
Eugster, Arthur, to Intropa Trading S.A. Instantaneous flow-through electric water heater for coffee makers. 4,460,819, Cl. 219-302.000.
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Calanchi, Massimo, 4,460,563, Cl. 424-35.000.
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Ansorge, Wilhelm, 4,460,525, Cl. 264-39.000.
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Robinson, Ronald A.; Graf, Wendie T.; and Evans, George D., III, 4,460,487, Cl. 252-8.800.
Evans, Robert M.; and Leonard, Thomas M., to RPM, Inc. Polyurethane joint sealing for building structures. 4,460,737, Cl. 524-584.000.
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Wedemeyer, Karlfried; Hagedorn, Ferdinand; and Evertz, Werner, 4,460,788, Cl. 564-412.000.
Exxon Research and Engineering Co.: *See*—
Baumann, George P.; and Zboray, James A., 4,460,130, Cl. 239-559.000.
Flory, John F., 4,459,930, Cl. 114-230.000.
Gudelis, David A.; and Reid, Lloyd E., 4,460,453, Cl. 208-33.000.
Pan, Yen-Chi; and Stogryn, Eugene L., 4,460,385, Cl. 55-73.000.
Peiffer, Dennis G.; Lundberg, Robert D.; Kowalik, Ralph M.; and Turner, S. Richard, 4,460,758, Cl. 526-287.000.
Rehrer, David H., 4,460,380, Cl. 44-62.000.
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Mann, Egon; and Eymuller, Helmut, 4,459,875, Cl. 74-785.000.
Fabel, Warren M. Non-impact single and multi-ply printing method and apparatus. 4,460,676, Cl. 430-333.000.
Fabriques d'Horlogerie de Fontainemelon S.A.: *See*—
Othenin-Girard, Andre, 4,460,281, Cl. 368-88.000.
Fahlstrom, Per A. H. H.; Back, Erik G.; Svemar, Sten C.; and Wallsten, Bruno C., to Boliden Aktiebolag. Method of recovering high-grade fuel from solid mineral-fuel raw material. 4,460,376, Cl. 44-1.00B.
Fahnrich, Hans-Jurgen, to Patent-Treuhand-Gesellschaft fur Elektrische-Glohlampen. Starter circuit for a low pressure discharge lamp. 4,460,848, Cl. 315-101.000.
Falk, Lars L., to Kockums Industri AB. Governing fuel injection and hydraulic transmission simultaneously. 4,459,806, Cl. 60-327.000.
Falk, Robert A.: *See*—
Kleiner, Eduard K.; Cooke, Thomas W.; and Falk, Robert A., 4,460,480, Cl. 252-8.050.
Fant, William W.: *See*—
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Fanuc Ltd.: *See*—
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Fasolino, Gabriel V.: *See*—
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Fathauer, George H.: *See*—
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Felcht, Utz-Hellmuth; and Perplies, Eberhard, to Hoechst Aktiengesellschaft. Dispersing auxiliary for preparing cellulose ethers. 4,460,766, Cl. 536-84.000.
Feldkamper, Richard, to Windmoller & Holscher. Non-uniform drive with balancing of masses. 4,459,866, Cl. 74-69.000.
Fenter, William S.; and Schott, Arthur E., to Honeywell Information Systems Inc. Control circuit arrangement for a self-start power supply. 4,460,951, Cl. 363-49.000.
Fenton, Leonard, to Marlen Manufacturing and Development Co. Clamp closure assembly. 4,460,359, Cl. 604-277.000.
Ferretti, Serge. Hand weapon caliber reducers. 4,459,774, Cl. 42-77.000.
Feuerbaum, Hans-Peter; and Knauer, Ulrich, to Siemens Aktiengesellschaft. Method for measuring resistances and capacitances of electronic components. 4,460,866, Cl. 324-57.0PS.
Ffooks, Roger C., to Ocean Phoenix Holdings N.V. Tanks for the storage and transport of fluid media under pressure. 4,459,929, Cl. 114-74.00A.
Fiber Glass Systems Inc.: *See*—
Michael, Vesta F., 4,460,422, Cl. 156-175.000.
Fichtel & Sachs AG: *See*—
Bergles, Eduard, 4,460,347, Cl. 474-82.000.
Muller, Gerd; Koller, Manfred; and Sydekum, Heinz, 4,460,074, Cl. 188-322.140.
Field, George F.; Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, to Hoffmann-La Roche Inc. 4-(2-Benzoylphenyl-1-pyazole and 4-(2-benzoylphenyi)-1-pyrazoline derivatives. 4,460,781, Cl. 548-356.000.
Fijol, Edward J.: *See*—
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Fillmore, Francis L.; Wampler, David, Jr.; and Collins, Theodore H., to GKN Automotive Components, Inc. Clamp and method enabling tightness check. 4,459,862, Cl. 73-862.010.
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Morgan, H. William, 4,460,468, Cl. 210-445.000.
Finegold, Aaron N. Urethral anesthetic devices. 4,460,360, Cl. 604-288.000.
Finger, Eugene P., to Curtis Instruments, Inc. Quiescent voltage sampling battery state of charge meter. 4,460,870, Cl. 324-429.000.
Fink, Bernd, deceased: *See*—
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Finney, David, to Gec-Elliott Automation Limited. Controlled bridge rectifier. 4,460,950, Cl. 363-44.000.
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Schulte-Elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., 4,460,792, Cl. 568-341.000.
Fisher, John M., to B. F. Goodrich Company, The. Delayed restraint release device for inflatable escape slides. 4,460,062, Cl. 182-48.000.
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Flack, Thomas L.: *See*—
Barnes, Elwood E.; and Flack, Thomas L., 4,460,003, Cl. 133-1.00R.

Flasza, Michael D., to Zenith Electronics Corporation. Automatic switching circuit for a dual mode television receiver. 4,460,918, Cl. 358-21.00R.
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Fletcher, Mary A., to University of Miami. Bovine glycoproteins and use in diagnosing infectious mononucleosis. 4,460,694, Cl. 436-531.000.
Flodin, Gunnar R.: *See—*
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Flory, John F., to Exxon Research and Engineering Co. Riser and detachably coupled yoke mooring system. 4,459,930, Cl. 114-230.000.
Flowers, Ronald A.: *See—*
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FMC Corporation: *See—*
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Kunkle, Calvin S., 4,460,154, Cl. 251-130.000.
Fock, Jurgen; Schedlitzki, Dietmar; and Wacker, Holger, to Th. Goldschmidt Ag. Process for flexibilizing epoxide resins. 4,460,746, Cl. 525-117.000.
Foor, Forrest; and Morin, Nancy R., to Merck & Co., Inc. DNA Cloning vector TG1, derivatives, and processes of making. 4,460,689, Cl. 435-172.000.
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Force, Carlton G., to Westvaco Corporation. Tertiary oil recovery surfactants. 4,460,484, Cl. 252-8.55D.
Ford, Donald F. Window. 4,459,789, Cl. 52-656.000.
Ford Motor Company: *See—*
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Janssen, Lutz J.; and Schrader, Helmuth, 4,460,213, Cl. 296-1.00S.
Sepanik, Thomas E., 4,460,219, Cl. 301-108.00R.
Tibbles, Thomas T., 4,459,872, Cl. 74-701.000.
Foreman, Richard L., to Camino Laboratories. Continuity detector for heartbeat rate measuring system. 4,459,993, Cl. 128-706.000.
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Forrester, John A., to Xerox Corporation. Automatic compensation for carriage flyback. 4,460,268, Cl. 355-8.000.
Forsyth, Bruce A.: *See—*
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Fory, Werner: *See—*
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Fouillet, Jean; and Cruchon, Jean C., to Thomson-CSF. Tunable resonator and an ultrahigh-frequency circuit comprising at least one such resonator. 4,460,878, Cl. 333-207.000.
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Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,460,488, Cl. 252-89.100.
Fourre, Remy D.; and de Langre, Bruno, to Societe d'Etudes et Conseills A E R O(Automation-Electronique-Recherche/Operationnelle. Process and apparatus for error detection. 4,460,996, Cl. 371-6.000.
Fox, David H.: *See—*
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Francesconi, Marino, Jr. Leader pipe insert. 4,460,469, Cl. 210-447.000.
Francis, John H., to Frederick Manufacturing Company. Rolling wobble press. 4,459,840, Cl. 72-452.000.
Francis, Peter S., to Atlantic Richfield Company. Thromboresistant molded article and method for its production. 4,460,652, Cl. 428-409.000.
Francois, Daniel: *See—*
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Frank, Andrew A., to Aisin Seiki Kabushiki Kaisha. Control system and method for a power delivery system having a continuously variable ratio transmission. 4,459,878, Cl. 74-857.000.
Franklin, David, to Audiological Engineering Corporation. Automatic background noise suppressor. 4,461,025, Cl. 381-56.000.
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Pytlewski, Louis L.; Krevitz, Kenneth; and Smith, Arthur B., 4,460,797, Cl. 568-715.000.
Frano, Francis G.: *See—*
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Fredlund, Sture: *See—*
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Frenchik, Robert A., to Minnesota Mining and Manufacturing Company. Image enhancement of photothermographic elements. 4,460,681, Cl. 430-502.000.
Frentzel, Richard L.; Rua, Louis, Jr.; and Pacheco, Anne L., to Olin Corporation. Preparation of carboxylic acid-containing polyurethane prepolymers and aqueous dispersions thereof. 4,460,738, Cl. 524-591.000.
Frey, William A.: *See—*
Dickinson, Johanne C.; and Frey, William A., 4,460,695, Cl. 436-533.000.
Freyberger, Laurin C., to ITT Industries, Inc. Deflection circuit for cathode-ray tubes. 4,460,850, Cl. 315-367.000.
Freyre, Frederick W.; and LaRosa, Richard, to Hazeltine Corporation. Acousto-optical channelized processor. 4,460,250, Cl. 350-358.000.
Friberg, Nelson, to Owens-Illinois, Inc. Registration control for a label cutoff apparatus. 4,459,885, Cl. 83-74.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Buchmann, Kurt, 4,459,738, Cl. 29-568.000.
Froix, Michael F., to Celanese Corporation. Blend of polycarbonate and wholly aromatic polyester. 4,460,735, Cl. 524-537.000.
Froix, Michael F.; and Trouw, Norman, to Celanese Corporation. Blend of sulfone polymer and wholly aromatic polyester. 4,460,736, Cl. 524-539.000.
Fry, Raymond A. Double width chaise lounge. 4,459,713, Cl. 5-211.000.
Fry, Stanley E., to Bear Medical Systems, Inc. Servo-controlled demand regulator for respiratory ventilator. 4,459,982, Cl. 128-204.230.
Frye, Kenneth G., to Beloit Corporation. Non-contacting slitter. 4,459,888, Cl. 83-507.000.
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FTZ Industries, Inc.: *See—*
Cochran, Charles D.; Clardy, Michael S.; and Kroske, William B., 4,459,839, Cl. 72-412.000.
Fugier, Roger: *See—*
Perrin, Robert; and Fugier, Roger, 4,460,799, Cl. 568-764.000.
Fugner, Armin: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, 4,460,581, Cl. 424-244.000.
Fuji Electric Company, Ltd.: *See—*
Sukigara, Kunio; and Kazama, Toyoki, 4,460,673, Cl. 430-128.000.
Fuji Photo Film Co., Ltd.: *See—*
Hara, Yoshio; and Shibata, Tadayoshi, 4,460,254, Cl. 354-86.000.
Hosoi, Noriyuki; Matsukawa, Hiroharu; and Ogata, Yasuhiro, 4,460,199, Cl. 346-207.000.
Kozai, Katsuya; Fujita, Yoshihiro; Shibata, Tadayoshi; Kikuchi, Hisashi; Nakai, Hiroshi; and Ichii, Hirokazu, 4,460,255, Cl. 354-86.000.
Nakamura, Sukenori; Igarashi, Akira; and Matsukawa, Hiroharu, 4,460,626, Cl. 427-150.000.
Ogawa, Masashi; Ishigaki, Kunio; Iwasaki, Nobuyuki; and Nakamura, Taku, 4,460,680, Cl. 430-434.000.
Fuji Photo Optical Co., Ltd.: *See—*
Harada, Yuho; and Kuwayama, Shigeo, 4,460,696, Cl. 501-37.000.
Murakami, Takashi; and Higuchi, Takeshi, 4,460,939, Cl. 362-31.000.
Fuji Xerox Co., Ltd.: *See—*
Watai, Yuji; Kitamura, Toshiyuki; Hirayama, Yoshiyuki; Matsuura, Akira; and Yasui, Hirokazu, 4,460,270, Cl. 355-14.00E.
Fujimoto, Kazuyuki: *See—*
Abe, Katsuo; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; Mitani, Masao; Fujimoto, Kazuyuki; and Hiratsuka, Shigetoshi, 4,460,494, Cl. 252-512.000.
Fujino, Masahisa: *See—*
Mashimo, Yukio; Iwashita, Tomonori; Ichiyanagi, Toshikazu; Fukahori, Hidehiko; Fujino, Masahisa; and Sunouchi, Akio, 4,460,265, Cl. 354-448.000.
Fujino, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Carrier regenerating circuit. 4,461,014, Cl. 375-83.000.
Fujioka, Takafumi: *See—*
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,460,593, Cl. 424-258.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Kada, Satoshi; and Hashimoto, Masashi, 4,460,502, Cl. 260-112.50R.
Ohama, Tadahiro, 4,460,143, Cl. 248-359.000.
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,460,583, Cl. 424-246.000.
Fujita, Noriko: *See—*
Mizukura, Noboru; Ikeuchi, Satoru; Suginaka, Shunji; and Fujita, Noriko, 4,460,682, Cl. 430-559.000.
Fujita, Yoshihiro: *See—*
Kozai, Katsuya; Fujita, Yoshihiro; Shibata, Tadayoshi; Kikuchi, Hisashi; Nakai, Hiroshi; and Ichii, Hirokazu, 4,460,255, Cl. 354-86.000.
Fujitsu Limited: *See—*
Hashimoto, Kaoru; Niwa, Koichi; and Murakawa, Kyohei, 4,460,916, Cl. 357-80.000.
Miwa, Hirohide; Hayashi, Hajime; and Shimura, Takaki, 4,459,853, Cl. 73-626.000.
Fujitsu Ten Limited: *See—*
Uehira, Eiji, 4,460,935, Cl. 361-91.000.
Fujiyama, Susumu; and Matsumoto, Shunichi, to Mitsubishi Gas Chemical Company, Inc. Process for continuous production of alkylbenzaldehydes. 4,460,794, Cl. 568-428.000.
Fukahori, Hidehiko: *See—*
Mashimo, Yukio; Iwashita, Tomonori; Ichiyanagi, Toshikazu; Fukahori, Hidehiko; Fujino, Masahisa; and Sunouchi, Akio, 4,460,265, Cl. 354-448.000.
Fukami, Akira; and Okamoto, Kunio, to Nippon Soken, Inc. Total heat exchanger. 4,460,388, Cl. 55-269.000.

Fukuda, Kyohei: *See*—
Sakurai, Soichi; Fukuda, Kyohei; and Osakabe, Kuniharu, 4,460,844, Cl. 313-412.000.
Fukuhara, Toru, to Nippon Kogaku K.K. Lens barrel containing an automatic focus matching device therein. 4,460,258, Cl. 354-402.000.
Fukukura, Kazutoyo, to AMP Incorporated. Keyboard switch having integral bezel. 4,460,810, Cl. 200-5.00A.
Fukushima, Isao; Kuwahara, Kazuyoshi; Nishijima, Hideo; Kobori, Yasunori; and Itoigawa, Keiichi, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering, Ltd. Signal voltage dividing circuit. 4,460,953, Cl. 363-62.000.
Fukushima, Toshiaki: *See*—
Nishikawa, Akio; Shitara, Masashi; Era, Susumu; Fukushima, Toshiaki; Suzuki, Hiroshi; and Kohkame, Hisashi, 4,460,783, Cl. 548-549.000.
Fukushima, Yoshio: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, 4,460,256, Cl. 354-173.110.
Fuller, Jean M. E., executrix: *See*—
Fuller, John R. D., deceased, 4,460,314, Cl. 416-145.000.
Fuller, John R. D., deceased (by Fuller, Jean M. E., executrix), to Rolls-Royce Limited. Vibration damped rotor blades for turbomachines. 4,460,314, Cl. 416-145.000.
Fung, Cliff D. J.: *See*—
Ko, Wen-Hsiung; Fung, Cliff D. J.; and Shen, Wei-Jiun, 4,459,856, Cl. 73-754.000.
Funk, Charles E.; and Oneufer, Andrew S., to Westinghouse Electric Corp. Burnable poison rod for a nuclear reactor fuel assembly. 4,460,540, Cl. 376-327.000.
Furlong, Donald R.: *See*—
Chamberlain, Michael J.; Myers, David R.; and Furlong, Donald R., 4,460,215, Cl. 297-14.000.
Furukawa, Tadayasu; Taguchi, Tokuichi; Yamamoto, Kazuhiro; and Ohta, Shigenori, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for improving the quality of whey protein. 4,460,615, Cl. 426-657.000.
Furuya, Katusuke, to Laurel Bank Machine Co., Ltd. Apparatus for detecting different kinds of coins for use in a coin handling machine. 4,460,004, Cl. 133-8.00R.
Gaidis, James M.; and Rosenberg, Arnold M., to W. R. Grace & Co. Multicomponent concrete superplasticizer. 4,460,720, Cl. 524-5.000.
Galle, Edward M., Jr., to Armco Inc. Dual ring casing hanger. 4,460,042, Cl. 166-217.000.
Gans, Michael J., to Bell Telephone Laboratories, Incorporated. Scanning phased array antenna system. 4,460,897, Cl. 343-754.000.
Ganshirt, Karlheinz; Walker, Wolfram H.; and Schleussner, Hans, to Biotest-Serum Institute GmbH. Polyurethane bag for blood. 4,460,365, Cl. 604-408.000.
GAO Gesellschaft fur Automation und Organisation mbH: *See*—
Haghiri-Tehrani, Yahya; and Hoppe, Joachim, 4,460,825, Cl. 235-488.000.
Gaquere, Jean-Pierre, to Societe Nationale Industrielle et Aerospatiale. Screw clamp pin extractor. 4,459,728, Cl. 29-240.000.
Garbe Iron Works, Inc.: *See*—
Empson, Kenneth G., 4,460,099, Cl. 213-159.000.
Gates, William J.; and Zwirlein, John F., to Olin Corporation. Air purge/solvent bath apparatus and method. 4,460,126, Cl. 239-112.000.
Gauer, Daniel S.: *See*—
Alseth, Steven M.; Gauer, Daniel S.; and Sullivan, Bruce M., 4,460,390, Cl. 55-323.000.
Gautier, Jean-Claude: *See*—
Tellier, Jacques; Sirvins, Andree ; Gautier, Jean-Claude; and Tramier, Bernard, 4,460,692, Cl. 435-243.000.
Gaymans, Reinoud J.; and Bour, Edmond H. J. P., to Stamicarbon B.V. Preparation of high molecular polytetramethylene adipamide. 4,460,762, Cl. 528-335.000.
Gayton, Michael A.: *See*—
Richard, Armand C.; Gayton, Michael A.; and D'Ambra, Anthony F., 4,459,829, Cl. 63-12.000.
Gec-Elliott Automation Limited: *See*—
Finney, David, 4,460,950, Cl. 363-44.000.
Gee, Lubin; Cheng, Pearl; Bobra, Yogendra; and Mehta, Rustam, to Intel Corporation. Intelligent electrically programmable and electrically erasable ROM. 4,460,982, Cl. 365-189.000.
Gee, May L.: *See*—
Anderson, Robert W.; Gee, May L.; and McMullen, Alice K., 4,460,960, Cl. 364-200.000.
Gehring, Johann: *See*—
Birkle, Siegfried; Stoger, Klaus; and Gehring, Johann, 4,460,447, Cl. 204-213.000.
Geisenhof, Heinz: *See*—
Meissner, Dietrich; and Geisenhof, Heinz, 4,459,763, Cl. 34-75.000.
Geisthoff, Hubert, to Jean Walterscheid GmbH. Overload clutch assembly. 4,460,077, Cl. 192-56.00R.
Gelin, Claude, to CGEE Alsthom. Adapter for a female electrical connector. 4,460,235, Cl. 339-154.00R.
General DataComm Industries Inc.: *See*—
Hampton, Dean A.; and Lambert, David A., 4,460,993, Cl. 370-84.000.
General Dynamics Corporation/Convair Div.: *See*—
Lynch, Robert A., 4,459,915, Cl. 102-374.000.
General Dynamics Corporation, Electronics Division: *See*—
Tricoles, Gus P.; and Rope, Eugene L., 4,460,901, Cl. 343-872.000.
General Electric Company: *See*—
Ashby, Bruce A., 4,460,739, Cl. 524-702.000.
Brunelle, Daniel J., 4,460,778, Cl. 546-304.000.
Grandey, Max F., 4,460,185, Cl. 277-53.000.
Interrante, Leonard V., 4,460,654, Cl. 428-428.000.
Iocovangelo, Charles D., 4,460,495, Cl. 252-518.000.
Klopfer, Howard J.; and Orlando, Charles M., 4,460,798, Cl. 568-723.000.
Kochanowski, John E.; and Wambach, Allen D., 4,460,731, Cl. 524-451.000.
Levinson, Lionel M., 4,460,623, Cl. 427-101.000.
Ohno, John M., 4,460,382, Cl. 51-307.000.
Orlando, Charles M.; and Klopfer, Howard J., 4,460,800, Cl. 568-764.000.
Pedersen, James R.; Parker, David M.; and Trechel, Robert G., 4,460,659, Cl. 428-675.000.
Smith, Lowell S.; and Brisken, Axel F., 4,460,841, Cl. 310-334.000.
Smith, William E., 4,460,702, Cl. 502-150.000.
Steigerwald, Robert L., 4,460,949, Cl. 363-28.000.
Thomas, Daniel A.; Malone, Paul E.; and Goth, Gary F., 4,460,893, Cl. 340-682.000.
Tseng, Wu-Yang; and Lampsat, Bruno G., 4,460,315, Cl. 416-216.000.
General Foods Corporation: *See*—
Saleeb, Fouad Z.; and Mitchell, Annette, 4,460,612, Cl. 426-477.000.
General Motors Company: *See*—
Bochen, Bernd; and Jagstaidt, Karlheinz, 4,460,139, Cl. 248-68.100.
General Signal Corporation: *See*—
Lawler, Joseph A.; and Viero, Lawrence G., 4,460,332, Cl. 432-72.000.
General Steel Industries, Inc.: *See*—
Behnke, Thomas L., 4,460,346, Cl. 464-179.000.
Geo Condor, Inc.: *See*—
Arribau, Jorge O.; Dorn, Russell J.; and Dubic, Michael G., 4,460,276, Cl. 366-13.000.
George, Pascal: *See*—
Kaplan, Jean-Pierre; and George, Pascal, 4,460,592, Cl. 424-256.000.
Gerhart, Roland T., to IEM Ltd. Fan unit. 4,460,312, Cl. 415-207.000.
Gessel, James M.; Kunz, Gary L.; and Scheidenhelm, E. Louis, to Hart-Carter Company. Harvester reel pick-up bat construction. 4,459,797, Cl. 56-220.000.
Gfeller, Karl; Koch, Carl; and Koch, Hans C., to Sinar AG Schaffhausen. Apparatus for calculating and displaying and/or controlling exposure parameters for photographic pictures. 4,460,263, Cl. 354-415.000.
Gibson, Kirk R.; Houston, Robert J.; Hughes, Thomas R.; and Jacobson, Robert L., to Chevron Research Company. Naphtha reforming process. 4,460,457, Cl. 208-139.000.
Giersch, Wolfgang; and Ohloff, Gunther, to Firmenich SA. Unsaturated alicyclic ethers and their utilization as perfuming and flavoring ingredients. 4,460,498, Cl. 252-522.00R.
Gies, Jakob. Device for the carrying of skis. 4,460,207, Cl. 294-147.000.
Giffune, Joseph W.; Halicky, Francis N.; and Fijol, Edward J., to Jernberg Forgings Co. Method of making dies. 4,459,880, Cl. 76-107.00R.
Gill, John G.; and Hemens, James F., to Teleflex Morse Ltd. Remote control mechanisms. 4,459,870, Cl. 74-471.0XY.
Gilleland, Randall C.: *See*—
Bell, Oliver A., Jr.; and Gilleland, Randall C., 4,460,815, Cl. 219-69.00M.
Gist Brocades NV: *See*—
Sanders, Johan P. M.; and Docherty, Andrew J. P., 4,460,688, Cl. 435-172.300.
Giuffrida, Giorgio G., to NECCHI Societa per Azioni. Motor-driven compressor-condenser group for cooling cycles. 4,459,820, Cl. 62-238.600.
GKN Automotive Components, Inc.: *See*—
Fillmore, Francis L.; Wampler, David, Jr.; and Collins, Theodore H., 4,459,862, Cl. 73-862.010.
Glaeser, Wolfgang, to Grillo-Werke AG. Process for preparation of zinc powder for alkaline batteries by amalgamation of zinc powder. 4,460,543, Cl. 420-513.000.
Glance, Patrick M., to Concept Anaylsis Corporation. Energy absorbing vehicle bumper assembly. 4,460,205, Cl. 293-120.000.
Glasser, Herman: *See*—
Malamud, Herbert; and Glasser, Herman, 4,460,833, Cl. 250-519.100.
Glaxo Group Limited: *See*—
Bradshaw, John, 4,460,506, Cl. 260-239.00E.
Glidden, Gregory L., to FMC Corporation. Method and apparatus for tension setting and compression releasing tubular connectors. 4,459,931, Cl. 114-230.000.
Globe Tool & Engineering Company, The: *See*—
Banner, Alvin C., 4,459,742, Cl. 29-597.000.
Gloger, Manfred; Heinle, Josef; and Schlumberger, Helmut, to Boehringer Mannheim GmbH. Soluble liver uricase with a process for the preparation thereof and with the use thereof. 4,460,683, Cl. 435-10.000.
Gockel, Judith. Prevention of lost circulation of drilling muds. 4,460,052, Cl. 175-72.000.
Goff, Frederick. Multi-directional portable hand truck. 4,460,189, Cl. 280-47.270.
Goldenberg, M. David. Tumor localization and therapy with labeled antibodies specific to intracellular tumor-associated markers. 4,460,561, Cl. 424-1.100.

Goldenberg, Miltos D. Tumor localization and therapy with labeled antibodies specific to intracellular tumor-associated markers. 4,460,559, Cl. 424-1.100.

Gomez, Dominador S. Cosmetic composition. 4,460,571, Cl. 424-71.000.

Gomi, Yoshiyuki: *See*—
Yamada, Kuniharu; Gomi, Yoshiyuki; and Handa, Tsuneo, 4,460,936, Cl. 361-305.000.

Goode, Henry C.: *See*—
Kapura, Edward M.; and Goode, Henry C., 4,460,397, Cl. 65-99.500.

Goodfellow, Anthony E. B.; Kennemer, James C.; and Donlevy, Timothy J. Door hanging envelope. 4,460,119, Cl. 229-68.00R.

Goodin, Richard L.: *See*—
Jurva, Edsel O.; and Goodin, Richard L., 4,460,664, Cl. 429-181.000.

Goodman, Jack E., to Optelecom, Incorporated. Tool for cleaning the exposed end of an optical fiber. 4,459,746, Cl. 30-124.000.

Goodman System Company, Inc.: *See*—
Goodman, Toronta P., 4,459,943, Cl. 123-25.00J.

Goodman, Toronta P., to Goodman System Company, Inc. Fluid injection system for an internal combustion engine responsive to fuel flow. 4,459,943, Cl. 123-25.00J.

Gordbegli, Masocbehr; and Mendoza, Joe, to Purex Pool Products, Inc. Heat sensitive pool light. 4,460,944, Cl. 362-276.000.

Gordon, Conrad J.: *See*—
Chynoweth, Lawrence L.; and Gordon, Conrad J., 4,460,966, Cl. 364-468.000.

Gordon, Eugene I., to AT&T Bell Laboratories. Data accessing system for optical disk mass memory. 4,460,988, Cl. 369-32.000.

Goricanec, Zvonko: *See*—
Probst, Karl; Hufken, Kurt; and Goricanec, Zvonko, 4,459,904, Cl. 100-11.000.

Goth, Gary F.: *See*—
Thomas, Daniel A.; Malone, Paul E.; and Goth, Gary F., 4,460,893, Cl. 340-682.000.

Gottfried, Carlos F., to Power Group International Corp. Uninterruptible power system. 4,460,834, Cl. 307-64.000.

Goudie, Alexander C.: *See*—
Adams, David R.; and Goudie, Alexander C., 4,460,595, Cl. 424-269.000.

Goursat, Albert G.: *See*—
Devalois, Serge; Hersant, Thierry; Goursat, Albert G.; and Weisang, Francois, 4,460,409, Cl. 75-96.000.

Gower, Philip B.: *See*—
Smith, Rory J. M.; Sykes, Brenda M.; Terry, Roger S.; Coates, David A.; and Gower, Philip B., 4,459,706, Cl. 2-195.000.

Graciet, Michel; Romann, Annick; and Buchy, Francois, to Thomson-CSF. Process for the manufacture of thick layer varistors on a hybrid circuit substrate. 4,460,624, Cl. 427-102.000.

Gradl, Reinhard: *See*—
Schimmel, Gunther; Gradl, Reinhard; and Heymer, Gero, 4,460,549, Cl. 423-10.000.

Graf, Wendie T.: *See*—
Robinson, Ronald A.; Graf, Wendie T.; and Evans, George D., III, 4,460,487, Cl. 252-8.800.

Grandey, Max F., to General Electric Company. Seal including a non-metallic abradable material. 4,460,185, Cl. 277-53.000.

Grandi, Vittorio, to Multimatic-Maschinen GmbH. & Co. Apparatus for preventing a contamination of the ambient air during an emptying and cleaning of the distillation vessel of dry cleaning apparatus. 4,459,831, Cl. 68-18.00R.

Granitz, Fritz: *See*—
Wiesinger, Horst; Granitz, Fritz; Hargassner, Reinhard; and Bramberger, Hubert, 4,460,031, Cl. 164-150.000.

Gratton, Arthur D.; McGhie, Terence V.; Whelan, Robert C.; and Peeters, Josephus B., to Dorman Smith Fuses Limited. Fuse. 4,460,888, Cl. 337-290.000.

Gray, Randall C.: *See*—
Bynum, Byron G.; Gray, Randall C.; and Jarrett, Robert B., 4,460,865, Cl. 323-313.000.

Greivenkamp, John E., Jr.; Lambeth, David N.; and Meyer, James W., to Eastman Kodak Company. Single lens rangefinder device having light emitter and detector. 4,460,259, Cl. 354-403.000.

Grenga, Joseph R. Guard rail and reflective strip. 4,460,161, Cl. 256-13.100.

Grenier, Louis. Bicycle saddle bag. 4,460,114, Cl. 224-32.00R.

Griffin, Frank O.: *See*—
Moore, John O.; and Griffin, Frank O., 4,459,777, Cl. 47-1.500.

Griffith, Carl D.: *See*—
Skutecki, Edmund R.; Griffith, Carl D.; and Bowie, Robert A., 4,460,964, Cl. 364-434.000.

Grillo-Werke AG: *See*—
Glaeser, Wolfgang, 4,460,543, Cl. 420-513.000.

Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, to Societe Anonyme dite: L'OREAL. Plant extraction residue as a thickening or opacifying agent for a cosmetic composition. 4,460,488, Cl. 252-89.100.

Gross, Werner; and Straubel, Max, to Robert Bosch GmbH. Electrically controlled fuel injection apparatus for multi-cylinder internal combustion engines. 4,459,963, Cl. 123-506.000.

Groves, Quentin D.: *See*—
Battista, Ralph N.; Groves, Quentin D.; and Tow, Jimmy, 4,460,808, Cl. 179-84.0VF.

Gruber, Robert J.; Julien, Paul C.; Bolte, Steven B.; and Koch, Ronald J., to Xerox Corporation. Positively charged electrostatic toner contains low molecular weight waxy material and pyridinium halide or organic sulfonate. 4,460,672, Cl. 430-110.000.

Gruber, Walter: *See*—
Demuth, Hans; and Gruber, Walter, 4,460,021, Cl. 139-185.000.

Gruetzmacher, Robert R.; and Munger, Stanley H., to Du Pont de Nemours, E. I., and Company. Process for preparing an overcoated photopolymer printing plate. 4,460,675, Cl. 430-300.000.

Gruhler, Siegfried, to Mauser-Werke Oberndorf GmbH. Measuring device. 4,459,755, Cl. 33-169.00R.

Grundig E. M. V.: *See*—
Fleissner, Horst, 4,460,867, Cl. 324-117.00H.

GTE Network Systems Incorporated: *See*—
Lender, Adam; and Olszanski, Henry H., 4,461,011, Cl. 375-18.000.

GTE Products Corporation: *See*—
Bert, Joseph E.; and Cotterman, Robert W., 4,460,895, Cl. 343-713.000.

Gudelis, David A.; and Reid, Lloyd E., to Exxon Research and Engineering Co. Solvent dewaxing waxy bright stock using a combination polydialkyl fumarate-vinyl acetate copolymer and polyalkyl (meth-) acrylate polymer dewaxing aid. 4,460,453, Cl. 208-33.000.

Guenther, Kenneth L.; Zemke, Edward H.; and Warden, Gerald D., to Bell & Howell Company. Ink jet catcher. 4,460,903, Cl. 346-75.000.

Guhne, Wieland: *See*—
Ahlf, Heinz-Jurgen; Guhne, Wieland; and Fink, Bernd, deceased, 4,459,720, Cl. 15-398.000.

Gupta, Tapan K.; Carlson, William G.; and Sweetana, Andrew S., to Westinghouse Electric Corp. Voltage stable nonlinear resistor containing minor amounts of aluminum and selected alkali metal additives. 4,460,497, Cl. 252-518.000.

Gutleber, Frank S., to United States of America, Army. Orthogonal CDMA system utilizing direct sequence pseudo noise codes. 4,460,992, Cl. 370-19.000.

Gwyn, Marion V. Arterial pulse rate monitor and stress warning device. 4,459,992, Cl. 128-687.000.

Haag, Jurgen: *See*—
Sameh, Ali; and Haag, Jurgen, 4,460,547, Cl. 423-7.000.

Haberle, Norman; and Eberle, Otto, to Consortium fur Elektrochemische Industrie GmbH. 2-Ethoxymethyl and 2-methoxymethyl N-(3,5-dichlorophenyl) succinamides. 4,460,782, Cl. 548-547.000.

Haddock, William H.: *See*—
Hassan, Awatif E.; Haddock, William H.; and Zink, Randolph L., 4,459,924, Cl. 111-2.000.

Haden Schweitzer Corporation: *See*—
Robson, John; and Carthew, Maximilian K., 4,460,331, Cl. 432-72.000.

Haefliger, William W.: *See*—
Pangburn, William E., 4,459,987, Cl. 128-355.000.

Haertle, Klaus: *See*—
Mascher, Werner; Zloczysti, Stefan; Woicke, Bernd; and Haertle, Klaus, 4,459,981, Cl. 128-202.260.

Hafer, Linda B. Educational target game. 4,460,179, Cl. 273-402.000.

Haga, Kyosuke; and Tanaka, Tsuneo, to Toyoda Koki Kabushiki Kaisha. Rotary servovalve. 4,460,016, Cl. 137-625.240.

Hage Connectors, Inc.: *See*—
Hageman, Neil, 4,460,226, Cl. 339-55.000.

Hagedorn, Ferdinand: *See*—
Wedemeyer, Karlfried; Hagedorn, Ferdinand; and Evertz, Werner, 4,460,788, Cl. 564-412.000.

Hageman, Neil, to Hage Connectors, Inc. Electrical connector for luminous displays. 4,460,226, Cl. 339-55.000.

Haghiri-Tehrani, Yahya; and Hoppe, Joachim, to GAO Gesellschaft fur Automation und Organisation mbH. Carrier element for an IC module. 4,460,825, Cl. 235-488.000.

Hagiwara, Takaaki; Itoh, Yokichi; Kondo, Ryuji; Yatsuda, Yuji; and Minami, Shinichi, to Hitachi, Ltd. Nonvolatile MNOS semiconductor memory. 4,460,980, Cl. 365-184.000.

Hain, Paul O.; and Lepisto, J. George, to Champion International Corporation. Bag resealing clip. 4,460,091, Cl. 206-621.000.

Halicky, Francis N.: *See*—
Giffune, Joseph W.; Halicky, Francis N.; and Fijol, Edward J., 4,459,880, Cl. 76-107.00R.

Hall, Richard H.: *See*—
Derby, Robert L.; Hall, Richard H.; and Young, Howard L., 4,460,572, Cl. 424-78.000.

Hallcher, Richard C.: *See*—
Coleman, James P.; and Hallcher, Richard C., 4,460,787, Cl. 562-599.000.

Hallden Machine Company, The: *See*—
Ingham, James D., 4,459,887, Cl. 83-311.000.

Halle, Pascal, to Sarl: Infomain. Topographical surveying instrument. 4,459,758, Cl. 33-274.000.

Halliburton Company: *See*—
Hanlon, David J.; and Almond, Stephen W., 4,460,751, Cl. 525-371.000.
Weaver, Jimmie D., 4,460,483, Cl. 252-8.55R.
Weaver, Jimmie D.; Harris, Lawrence E.; and Harms, Weldon M., 4,460,627, Cl. 427-212.000.

Hallmark Cards Incorporated: *See*—
Darnell, James P., II; and Bridgwater, Jon D., 4,460,097, Cl. 211-189.000.

Halstead, William M., to Henry Mann Incorporated. Tool for cable tie installation and removal. 4,459,717, Cl. 7-134.000.

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Harrington, Eugene, to Tune O Mize Inc. Fuel consumption testing arrangement. 4,459,846, Cl. 73-114.000.
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Young, William R., 4,461,000, Cl. 371-21.000.
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Hasumi, Shigeru; Tanaka, Kazuo; and Nishidoi, Takashi, to Toray Industries, Inc. Vibratory diaphragm for loudspeaker. 4,460,060, Cl. 181-169.000.
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Hatcher, Stephen C.: *See*—
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Hattori, Masayuki; and Nakamura, Shigeo, to Fanuc Ltd. Stabilizing power supply apparatus. 4,460,955, Cl. 363-91.000.
Hawkins, Patrick G. Wheel dolly. 4,460,306, Cl. 414-427.000.
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Hayashi, Hajime: *See*—
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Tsuchiya, Shozo; Ohshima, Akio; and Hayashi, Hideo, 4,460,724, Cl. 524-77.000.
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Hayashi, Mikio. Gear wrench with torque meter. 4,459,882, Cl. 81-477.000.
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Hayashi, Toshio, to Nippondenso Co., Ltd. Ignition coil for internal combustion engines. 4,459,967, Cl. 123-634.000.
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Freyre, Frederick W.; and LaRosa, Richard, 4,460,250, Cl. 350-358.000.
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Hedrick, Warren R., to Interpace Corporation. Thermally controlled vent damper. 4,460,121, Cl. 236-1.00G.
Heide, Charles H.; and Hanson, Edward S. Torque release clutch. 4,460,078, Cl. 192-56.00R.

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Trent, Bryan O., 4,460,329, Cl. 431-20.000.
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Heinecke, Rudolf A. H.; and Stern, Ronald C., to ITT Industries, Inc. Aluminum deposition on semiconductor bodies. 4,460,618, Cl. 427-39.000.
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Heinrich, Alfred A.; and Oerter, Karl E., to Max Baermann GmbH. Brake magnet for watt-hour meters. 4,460,882, Cl. 335-225.000.
Helander, Pertti J., to Esko Polho Oy. Openable closing device for freight or storage tanks. 4,460,110, Cl. 222-504.000.
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Helopharm W. Petrik & Co.: *See*—
Petrik, Gerd; and Sachse, Rolf, 4,460,605, Cl. 424-330.000.
Hemens, James F.: *See*—
Gill, John G.; and Hemens, James F., 4,459,870, Cl. 74-471.0XY.
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Henry, James W.; and Mitchell, Thomas A., to Eastman Kodak Company. Process for monitoring crimped material. 4,460,921, Cl. 358-107.000.
Henry Mann Incorporated: *See*—
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Henry, Richard T. Log handling device and method therefor. 4,460,028, Cl. 144-366.000.
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Hensley, Albert L., Jr.; Miller, Jeffrey T.; Nevitt, Thomas D.; and Tait, A. Martin, to Standard Oil Company (Indiana). Hydrocarbon conversion catalyst. 4,460,698, Cl. 502-66.000.
Herchenroeder, Robert B., to Cabot Corporation. Iron-bearing nickel-chromium-aluminum-yttrium alloy. 4,460,542, Cl. 420-443.000.
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Hersant, Thierry: *See*—
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Hersman, Michael S., to Hughes Aircraft Company. Quasi-optical balanced biconical mixer. 4,461,039, Cl. 455-326.000.
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Cabell, Paul C.; and Kimmich, Robert L., 4,459,821, Cl. 62-239.000.
Hester, Richard E., to Control Data Corporation. Active differential output direct current offset voltage compensation circuit for a differential amplifier. 4,460,873, Cl. 330-259.000.
Hewitt, Delbert C.; and Fasolino, Gabriel V. Fluid pressure operated reciprocating mechanism. 4,459,718, Cl. 15-250.00B.
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Hildebrand, Donald L.; and Martinez, Mario J., to Elgin Sweeper Company. Guide wheel suspension for a three wheel sweeper. 4,460,186, Cl. 280-92.000.
Hildebrand, Georges. All-terrain and amphibious automotive vehicle. 4,459,932, Cl. 114-270.000.
Hill, William J. Poultry skinning machine. 4,459,721, Cl. 17-11.000.
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Hirakawa, Tadashi; and Sato, Hiroshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Mill roll stand. 4,460,135, Cl. 242-68.400.
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Hiraoka, Hiroyuki, to International Business Machines Corporation. Deposition of polymer films by means of ion beams. 4,460,436, Cl. 156-643.000.
Hirata, Kazuo; and Oda, Masatoshi, to Nippon Telegraph & Telephone Public Corp. Method of patterning device regions by oxidizing patterned aluminum layer. 4,460,413, Cl. 148-1.500.
Hiratsuka, Shigetoshi: *See*—
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Fukushima, Isao; Kuwahara, Kazuyoshi; Nishijima, Hideo; Kobori, Yasunori; and Itoigawa, Keiichi, 4,460,953, Cl. 363-62.000.
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Imura, Ryo; Ikeda, Tadashi; Suzuki, Ryo; Koiso, Nagatugu; Takeuchi, Teruaki; Umezaki, Hiroshi; and Sugita, Yutaka, 4,460,412, Cl. 148-1.500.
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Nishikawa, Akio; Shitara, Masashi; Era, Susumu; Fukushima, Toshiaki; Suzuki, Hiroshi; and Kohkame, Hisashi, 4,460,783, Cl. 548-549.000.
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Tanaka, Isamu; Oka, Hitoshi; Tomizawa, Akira; and Kikuchi, Hiroshi, 4,460,718, Cl. 523-400.000.
Tani, Mitsukiyo; and Kawashima, Seiichi, 4,460,817, Cl. 219-85.00D.
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Hobart, William M. Solar energy converter. 4,459,975, Cl. 126-449.000.
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Felcht, Utz-Hellmuth; and Perplies, Eberhard, 4,460,766, Cl. 536-84.000.
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Hoffman, Barry L., to RCA Corporation. Vacuum gripping apparatus. 4,460,208, Cl. 294-65.000.

Hoffman, Charles R., to International Business Machines Corporation. Sense amplifier for MOS static memory array. 4,460,985, Cl. 365-207.000.

Hoffman, Dwight K.; Harris, Robert F.; Tefertiller, Nancy B.; and Kains, Randall C., to Dow Chemical Company, The. Stable dispersions of polymers in polyfunctional compounds having a plurality of active hydrogens and polyurethanes produced therefrom. 4,460,715, Cl. 521-137.000.

Hoffmann, Helmuth, to Hydrotechnik GmbH. Measuring turbine for high volume, high viscosity fluids. 4,459,861, Cl. 73-861.780.

Hoffmann-La Roche Inc.: *See*—
Field, George F.; Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,460,781, Cl. 548-356.000.
Petrzilka, Martin; Schadt, Martin; and Villiger, Alois, 4,460,770, Cl. 544-242.000.

Hofmann, Peter, to Chemische Werke Huls AG. Process for alkoxycarbonylating alpha-olefins having a single branch. 4,460,510, Cl. 260-410.90R.

Hofmann, Walter, to Walter Hofmann Maschinenfabrik. Device for applying uniform traffic lines. 4,460,127, Cl. 239-126.000.

Hogan, John M. Tennis training apparatus. 4,460,172, Cl. 273-29.00A.

Hok, Bertil; and Ekstrom, Olof, to Siemens Aktiengesellschaft. Miniature pressure transducer. 4,459,841, Cl. 73-4.00R.

Holler, Mark A.: *See*—
Van Buskirk, Michael A.; and Holler, Mark A., 4,460,981, Cl. 365-189.000.

Holm, Robert E., to Rhone-Poulenc Agrochimie. Synergistic herbicide compositions of phenoxybenzoic acids and cyclohexanediones. 4,460,402, Cl. 71-98.000.

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Holton, James A.; and Inman, James C., to Davy-Loewy Limited. Shear. 4,459,889, Cl. 83-597.000.

Holtrop, James S.: *See*—
Dufour, Daniel L.; and Holtrop, James S., 4,460.741, Cl. 525-64.000.

Homan, Merle E.; Machol, Guenther K.; and Warren, Larry M., to International Business Machines Corporation. Single chip microcomputer selectively operable in response to instructions stored on the computer chip or in response to instructions stored external to the chip. 4,460,972, Cl. 364-900.000.

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Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Hosokawa, Takehiko, 4,459,961, Cl. 123-491.000.

Honda, Hiromitsu: *See*—
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Honeywell Inc.: *See*—
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Honeywell Information Systems Inc.: *See*—
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Lemay, Richard A.; Stanley, Philip E.; Woods, William E.; and Cushing, David E., 4,460,959, Cl. 364-200.000.

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Yanai, Toshiaki; Jojima, Teruomi; Kawakubo, Katsuhiko; Honma, Toyokuni; and Shindo, Masahiro, 4,460,597, Cl. 424-273.00P.

Honrath, Kurt, to Klockner-Humboldt-Deutz Aktiengesellschaft. Air-cooled multicylinder internal combustion engine having overhead camshaft. 4,459,947, Cl. 123-90.270.

Hoof Products Co.: *See*—
Slavik, William H.; and Swanberg, Roger A., 4,459,954, Cl. 123-350.000.

Hooker, Ross B., III: *See*—
Bassetti, Larry W.; Hooker, Ross B., III; and Kantor, Sherwood, 4,460,909, Cl. 346-160.000.

Hoolihan, Kevin M.: *See*—
Torkelsen, John B.; and Hoolihan, Kevin M., 4,460,975, Cl. 364-900.000.

Hopkins, David: *See*—
DeMarco, Richard E.; Hopkins, David; and McVicar, Walter D., 4,460,087, Cl. 206-415.000.

Hoppe, Joachim: *See*—
Haghiri-Tehrani, Yahya; and Hoppe, Joachim, 4,460,825, Cl. 235-488.000.

Horak, Vaclav; and Janata, Jiri, to University of Utah, The. Surface modified polymers. 4,460,747, Cl. 525-197.000.

Hori, Kohei: *See*—
Ueno, Makoto; and Hori, Kohei, 4,459,960, Cl. 123-481.000.

Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, to Toyama Chemical Company, Limited. 1-(4-Aminobenzyl)-2,3-dioxopiperazine derivatives, acid addition salts thereof and process for producing same. 4,460,774, Cl. 544-366.000.

Hori, Yoshimi; Ishida, Takashi; and Hayashi, Keizo, to Toyoda Gosei Co., Ltd. Metal mold for vulcanization of reinforced hose. 4,460,325, Cl. 425-393.000.

Horigome, Hirofumi: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, 4,460,256, Cl. 354-173.110.

Horita, Takashi: *See*—
Ataka, Matsuo; Aoki, Itaru; Horita, Takashi; and Nagao, Takehisa, 4,460,118, Cl. 228-146.000.

Horita, Yoshiyuki: *See*—
Takano, Shinji; and Horita, Yoshiyuki, 4,459,723, Cl. 24-434.000.

Horn, Werner; and Hennings, Jurgen, to Swiss Aluminum Ltd. Aluminum sheet having improved weldability. 4,460,418, Cl. 148-437.000.

Hornung, Karl-Otto, to Stopinc Aktiengesellschaft. Device and furnace for discharging measured quantities of molten metal. 4,460,163, Cl. 266-95.000.

Horton Industries, Inc.: *See*—
Hanks, James V., 4,460,079, Cl. 192-85.00A.

Horton, Joel R., to United States of America, Energy. Apparatus and method for transferring slurries. 4,460,318, Cl. 417-54.000.

Horvath, Agnes: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermes, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari nee Debreczy, Lelle; and David, Agoston, 4,460,771, Cl. 544-282.000.

Hosaka, Akihiko; Okuyama, Kiyotaka; and Kanazawa, Kiyoto, to TDK Corporation. Magnetic recording medium. 4,460,651, Cl. 428-402.000.

Hosek, William: *See*—
De Feo, Angelo; and Hosek, William, 4,460,037, Cl. 165-76.000.

Hoshi, Shoichi: *See*—
Terauchi, Takashi; Sato, Koji; and Hoshi, Shoichi, 4,460,705, Cl. 502-303.000.

Hosoda, Yutaka: *See*—
Takahashi, Shiro; Nakagawa, Yoshio; and Hosoda, Yutaka, 4,460,524, Cl. 264-26.000.

Hosoe, Kazuya: *See*—
Tsunekawa, Tokuichi; Hosoe, Kazuya; and Masunaga, Makoto, 4,460,836, Cl. 307-311.000.

Hosoi, Noriyuki; Matsukawa, Hiroharu; and Ogata, Yasuhiro, to Fuji Photo Film Co., Ltd. Microcapsule coated sheet for pressure sensitive copying paper. 4,460,199, Cl. 346-207.000.

Hosokawa, Takehiko: *See*—
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Hosokawa, Takehiko, 4,459,961, Cl. 123-491.000.

Hostetler, John E.: *See*—
Sears, I. Weir; Hostetler, John E.; and Hulsebusch, William H., 4,459,704, Cl. 2-69.000.

Houston, Robert J.: *See*—
Gibson, Kirk R.; Houston, Robert J.; Hughes, Thomas R.; and Jacobson, Robert L., 4,460,457, Cl. 208-139.000.

Howard, George R., to Aeronautical & General Instruments Limited. Coin validation apparatus. 4,460,080, Cl. 194-100.00A.

Howmedica Inc.: *See*—
McKay, William F.; and Van Syckle, Peter B., 4,459,985, Cl. 128-303.00R.

Hrboticky, Karel: *See*—
Brackmann, Warren A.; and Hrboticky, Karel, 4,459,999, Cl. 131-109.00R.

Hsiao, Mu-Yue: *See*—
Bossen, Douglas C.; and Hsiao, Mu-Yue, 4,461,001, Cl. 371-38.000.

Hubbard, Lafayette R.: *See*—
Conners, Ron; and McCormick, John, 4,459,995, Cl. 128-734.000.

Huber, George H., Jr. Sandblasting nozzle and control assembly. 4,460,011, Cl. 137-375.000.

Huber, Peter; Kaufmann, Rudolf; and Burkhardt, Juurgen, to Wacker-Chemie GmbH. Method for stabilizing organopolysiloxanes. 4,460,726, Cl. 524-114.000.

Hubner, Horst; Magendans, Frederik; and Van Rheenen, Bernhard J. P., to U.S. Philips Corporation. Method of producing an anode and anode thus obtained. 4,461,020, Cl. 378-143.000.

Hudson, Kenneth C., to RCA Corporation. Semiconductor laser scanning system. 4,460,240, Cl. 350-6.800.

Hufken, Kurt: *See*—
Probst, Karl; Hufken, Kurt; and Goricanec, Zvonko, 4,459,904, Cl. 100-11.000.

Hughes Aircraft Company: *See*—
Hersman, Michael S., 4,461,039, Cl. 455-326.000.
Silinsky, Robert E., 4,460,898, Cl. 343-777.000.

Hughes, Benjamin W., Jr. Cable coring and stripping tool and method. 4,459,881, Cl. 81-9.50C.

Hughes, Thomas R.: *See*—
Gibson, Kirk R.; Houston, Robert J.; Hughes, Thomas R.; and Jacobson, Robert L., 4,460,457, Cl. 208-139.000.

Hukuba Kogyo Kabushiki Kaisha: *See*—
Ando, Masumi, 4,460,145, Cl. 248-447.000.

Hulsebusch, William H.: *See*—
Sears, I. Weir; Hostetler, John E.; and Hulsebusch, William H., 4,459,704, Cl. 2-69.000.

Hulsing, Rand H., II, to Sundstrand Data Control, Inc. Angular rate and position transducer for borehole survey instrument. 4,459,759, Cl. 33-304.000.

Hulstrunk, William: *See*—
Brackelmanns, Norbert W.; and Hulstrunk, William, 4,460,913, Cl. 357-34.000.

Hultgren, Ake, to Studsvik Energiteknik AB. Method for final treatment of radioactive organic material. 4,460,500, Cl. 252-628.000.

Hunting Oilfield Services (UK) Limited: *See*—
McGugan, John D., 4,460,201, Cl. 285-18.000.

Huret, Alain P. B., legal representative: *See*—
Huret, Roger, deceased; and Huret, Alain P. B., legal representative, 4,459,848, Cl. 73-431.000.

Huret et ses Fils: *See*—
Huret, Roger, deceased; and Huret, Alain P. B., legal representative, 4,459,848, Cl. 73-431.000.
Huret, Roger, deceased; and by Huret, Alain P. B., legal representative, to Huret et ses Fils. Device for maintaining a dial on a housing and a distance recorder or the like provided with said device. 4,459,848, Cl. 73-431.000.
Hurley, Byron H.; and Ricks, Walter G. Liquid filling apparatus and method. 4,460,026, Cl. 141-1.000.
Hurskainen, Oiva, to Oy Wartsila Ab. Multi-function lock. 4,459,835, Cl. 170-486.000.
Huszarik, Fred A.: *See*—
Charlebois, Leonard J.; and Huszarik, Fred A., 4,460,159, Cl. 254-134.30R.
Hutchison, S. O., to Chevron Research Company. Concentric insulated tubing string. 4,459,731, Cl. 29-405.000.
Huth, Stanley W.; and Wagner, Hali G., to Allergan Pharmaceuticals, Inc. Methods of stabilizing thimerosal in presence of polyvinylpyrrolidone. 4,460,573, Cl. 424-80.000.
Huyck Corporation: *See*—
Mullaney, Peter, 4,460,023, Cl. 139-383.00A.
Hwang, Jennie S., to SCM Corporation. Solder paste and vehicle therefor. 4,460,414, Cl. 148-23.000.
Hyanova, Blanka; and Novotny, Jiri, to CKD Praha, oborovy podnik. Apparatus for picking-up and analyzing emitted accoustic and ultrasonic signals in hollow bodies. 4,459,850, Cl. 73-587.000.
Hydrometal S.p.A.: *See*—
Ducati, Umberto, 4,460,442, Cl. 204-114.000.
Hydrotechnik GmbH: *See*—
Hoffmann, Helmuth, 4,459,861, Cl. 73-861.780.
I.D.M. Electronics Limited: *See*—
Birch, Ernest H.; and Lobato, Andres, 4,460,242, Cl. 350-96.200.
Ice, Gene E.; and Sparks, Cullie J., Jr., to United States of America, Energy. Diffraction crystal for sagittally focusing x-rays. 4,461,018, Cl. 378-84.000.
Ichii, Hirokazu: *See*—
Kozai, Katsuya; Fujita, Yoshihiro; Shibata, Tadayoshi; Kikuchi, Hitashi; Nakai, Hiroshi; and Ichii, Hirokazu, 4,460,255, Cl. 354-86.000.
Ichikawa, Iwao: *See*—
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Ichino, Nobuyuki: *See*—
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Ichiyanagi, Toshikazu: *See*—
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ICI Australia Limited: *See*—
Serban, Alexander; Watson, Keith G.; Wilshire, Colin; and Forsyth, Bruce A., 4,460,588, Cl. 424-251.000.
Ida, Yasuhiro, to Clarion Co., Ltd. Unlocking attenuator for automatic tuning receiver. 4,461,034, Cl. 455-161.000.
IEM Ltd.: *See*—
Gerhart, Roland T., 4,460,312, Cl. 415-207.000.
Igarashi, Akira: *See*—
Nakamura, Sukenori; Igarashi, Akira; and Matsukawa, Hiroharu, 4,460,626, Cl. 427-150.000.
Igarashi, Yuriko; and Okada, Yoshio, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing a microcapsule. 4,460,722, Cl. 523-206.000.
Iguchi, Susumu: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, 4,460,256, Cl. 354-173.110.
Iha, Kiyoshi: *See*—
Tsunemura, Kazuo; Iha, Kiyoshi; and Janiszewski, Anthony T., 4,460,030, Cl. 160-35.000.
Iijima, Hiroshi; Moriya, Kunihiko; Tate, Kazuhito; Muroga, Goro; Yanagida, Kazuhiro; Nakamura, Yoshikazu; Inoue, Akiyoshi; and Higashi, Masahiro, to Mitsubishi Oil Co., Ltd. Process for producing pitch for using as raw material for carbon fibers. 4,460,454, Cl. 208-40.000.
Iioka, Akira; and Suzuki, Shoichi, to Nihon Dixie Company Limited. Method for producing a two-piece paper container. 4,460,348, Cl. 493-108.000.
Ikeda, Tadashi: *See*—
Imura, Ryo; Ikeda, Tadashi; Suzuki, Ryo; Koiso, Nagatugu; Takeuchi, Teruaki; Umezaki, Hiroshi; and Sugita, Yutaka, 4,460,412, Cl. 148-1.500.
Ikeda, Tsutomu; Iwamoto, Masanori; and Kizu, Shuji, to Tokyo Shibaura Denki Kabushiki Kaisha. Character separating system in use for an optical character reader. 4,461,027, Cl. 382-9.000.
Ikeuchi, Satoru: *See*—
Mizukura, Noboru; Ikeuchi, Satoru; Suginaka, Shunji; and Fujita, Noriko, 4,460,682, Cl. 430-559.000.
Illinois Tool Works Inc.: *See*—
Bettini, John E.; and Blucher, William J., 4,460,300, Cl. 411-375.000.
Solarz, Gilbert; and Frano, Francis G., 4,460,298, Cl. 411-15.000.
Imahashi, Takahiro. Cabochon copy grinding apparatus. 4,459,780, Cl. 51-101.00R.
Imanari, Makoto; and Takiguchi, Makoto, to Mitsubishi Petrochemical Co., Ltd. Catalyst for the production of styrene. 4,460,706, Cl. 502-304.000.
Imed Corporation: *See*—
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Imperial Chemical Industries PLC: *See*—
Barlow, Alan R.; and Doroszkowski, Andrew, 4,460,439, Cl. 204-56.00R.
Buscall, Richard; and Corner, Terence, 4,460,732, Cl. 524-460.000.
Candlin, John P.; Kelland, John W.; and Law, Peter L., 4,460,700, Cl. 502-104.000.
Jones, Derrick F.; and Oldham, Keith, 4,460,584, Cl. 424-249.000.
Twigg, Martyn V., 4,460,704, Cl. 502-302.000.
Imura, Ryo; Ikeda, Tadashi; Suzuki, Ryo; Koiso, Nagatugu; Takeuchi, Teruaki; Umezaki, Hiroshi; and Sugita, Yutaka, to Hitachi, Ltd. Method of making magnetic bubble memory device by implanting hydrogen ions and annealing. 4,460,412, Cl. 148-1.500.
Inagaki, Mitsuo; Ito, Seitoku; and Kasagi, Takao, to Nippon Soken, Inc. Rotary compressor. 4,459,817, Cl. 62-196.300.
Inagaki, Nobukatsu: *See*—
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Miller, James A., 4,460,303, Cl. 414-22.000.
Ingham, James D., to Halliden Machine Company, The. Rotary shear of variable cut lengths. 4,459,887, Cl. 83-311.000.
Ingraham, Thomas M.: *See*—
Bieri, Jurg H.; and Ingraham, Thomas M., 4,459,971, Cl. 126-417.000.
Inkmann, Donald A.: *See*—
Inkmann, Mark S.; Karolek, Neil C.; Reichard, John G.; and Inkmann, Donald A., 4,460,054, Cl. 177-149.000.
Inkmann, Mark S.; Karolek, Neil C.; Reichard, John G.; and Inkmann, Donald A. Method and apparatus for portion control. 4,460,054, Cl. 177-149.000.
Inman, James C.: *See*—
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Inoue, Akihisa: *See*—
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Inoue, Hiroshi; Isoi, Masaaki; and Sei, Kazuo, to Toa Nenryo Kogyo Kabushiki Kaisha. Adhesive resin composition and laminate thereof. 4,460,646, Cl. 428-344.000.
Inoue, Junichi: *See*—
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Inoue, Masayoshi: *See*—
Yoshida, Masazumi; Noda, Tadao; and Inoue, Masayoshi, 4,460,668, Cl. 430-31.000.
Inoue, Masuo: *See*—
Terano, Minoru; Kimura, Kouhei; Murai, Atsushi; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,460,701, Cl. 502-104.000.
Inoue, Nori, to Tokai Electric Wire Company Limited. Connector terminal. 4,460,239, Cl. 339-258.00F.
Inoue, Tomoaki; Ishikawa, Yoichi; and Kaneko, Mitsunori, to Oriental Yeast Co. Ltd. Steam-sterilizable carbon dioxide sensor. 4,460,451, Cl. 204-415.000.
Institut Francais du Petrole: *See*—
Deschamps, Andre; Cosyns, Jean; and Le Page, Jean-Francois, 4,460,553, Cl. 423-219.000.
Institut Pasteur: *See*—
Savrda, Jaroslav; and David, Hugo, 4,460,503, Cl. 260-112.50R.
Intel Corporation: *See*—
Engel, Paul R., 4,460,915, Cl. 357-74.000.
Gee, Lubin; Cheng, Pearl; Bobra, Yogendra; and Mehta, Rustam, 4,460,982, Cl. 365-189.000.
Van Buskirk, Michael A.; and Holler, Mark A., 4,460,981, Cl. 365-189.000.
Interlake, Inc.: *See*—
Cook, Anthony; and Winters, Robert P., 4,460,165, Cl. 266-158.000.
International Business Machines Corporation: *See*—
Anderson, Robert W.; Gee, May L.; and McMullen, Alice K., 4,460,960, Cl. 364-200.000.
Bassetti, Larry W.; Hooker, Ross B., III; and Kantor, Sherwood, 4,460,909, Cl. 346-160.000.
Bistline, William R.; and Hatcher, Stephen C., 4,460,851, Cl. 315-408.000.
Boehm, Russell W.; Keelen, William R.; and Rees, Herbert, 4,460,534, Cl. 264-246.000.
Bossen, Douglas C.; and Hsiao, Mu-Yue, 4,461,001, Cl. 371-38.000.
Cavill, Barry R.; and Dodgen, David F., 4,460,968, Cl. 364-519.000.
Chappell, Barbara A.; Chappell, Terry I.; and Woodall, Jerry M., 4,460,910, Cl. 357-22.000.
Eggebrecht, Lewis C.; and Saenz, Jesus A., 4,460,957, Cl. 364-200.000.
Hiraoka, Hiroyuki, 4,460,436, Cl. 156-643.000.
Hoffman, Charles R., 4,460,985, Cl. 365-207.000.
Homan, Merle E.; Machol, Guenther K.; and Warren, Larry M., 4,460,972, Cl. 364-900.000.
Knepper, Ronald W., 4,460,984, Cl. 365-190.000.
Shen, John C. S., 4,459,779, Cl. 51-296.000.

International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,460,795, Cl. 568-446.000.
International Standard Electric Corporation: *See—*
Parfree, Colin S.; and Worthington, Peter, 4,460,419, Cl. 156-56.000.
International Telephone and Telegraph Corporation: *See—*
Sterns, William G., 4,460,877, Cl. 333-26.000.
Interpace Corporation: *See—*
Hedrick, Warren R., 4,460,121, Cl. 236-1.00G.
Interrante, Leonard V., to General Electric Company. Aluminosilicate coating method, coated articles and organic substituted silicon-oxygen-aluminum oligomers. 4,460,654, Cl. 428-428.000.
Interstudio Design s.a.s.: *See—*
Raggiotti, Guglielmo, 4,460,146, Cl. 248-456.000.
Intradal N.V.: *See—*
Weststrate, Jan; and Staal, Ede M., 4,460,565, Cl. 424-52.000.
Intropa Trading S.A.: *See—*
Eugster, Arthur, 4,460,819, Cl. 219-302.000.
Inventab Audio Kb: *See—*
Mattisson, Sven, 4,460,872, Cl. 330-252.000.
Investment Rarities, Incorporated: *See—*
Burandt, Corliss O., 4,459,946, Cl. 123-90.160.
Iocovangelo, Charles D., to General Electric Company. Cathode for molten carbonate fuel cell. 4,460,495, Cl. 252-518.000.
Iqbal, Abul; Lienhard, Paul; and Pugin, Andre, to Ciba-Geigy Corporation. Nickel complex pigments of azines. 4,460,768, Cl. 548-105.000.
Ireland, Hugh C., to Simplex-GE (Holdings) Limited. Electrical coupling. 4,460,238, Cl. 339-255.00R.
Ishibashi, Hideyuki; and Takamiya, Kikuzo, to Bridgestone Cycle Co., Ltd. Foldable bicycle frame. 4,460,191, Cl. 280-287.000.
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Ishida, Takashi: *See—*
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Perrin, Robert; and Fugier, Roger, 4,460,799, Cl. 568-764.000.
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Jacobson, Amnon, 4,460,711, Cl. 521-65.000.
Itagaki, Tsuguo, to Hitachi, Ltd. Automatic tuning system for television receiver. 4,461,037, Cl. 455-169.000.
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Itoh, Takaaki: *See—*
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Itoh, Yokichi: *See—*
Hagiwara, Takaaki; Itoh, Yokichi; Kondo, Ryuji; Yatsuda, Yuji; and Minami, Shinichi, 4,460,980, Cl. 365-184.000.
Itoigawa, Keiichi: *See—*
Fukushima, Isao; Kuwahara, Kazuyoshi; Nishijima, Hideo; Kobori, Yasunori; and Itoigawa, Keiichi, 4,460,953, Cl. 363-62.000.
ITT Industries, Inc.: *See—*
Freyberger, Laurin C., 4,460,850, Cl. 315-367.000.
Heinecke, Rudolf A. H.; and Stern, Ronald C., 4,460,618, Cl. 427-39.000.
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Layman, Douglas C., 4,460,355, Cl. 604-118.000.
Somerville, Alvis J.; Conley, Richard B.; and Truitt, Robert B., 4,460,358, Cl. 604-250.000.
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Iwamoto, Masanori: *See—*
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Iwamoto, Mune: *See—*
Matsubara, Tetsuyuki; Ito, Norifumi; Ishida, Yuzuru; Iwamoto, Mune; and Maeda, Tetsuo, 4,460,278, Cl. 366-149.000.
Iwasaki, Nobuyuki: *See—*
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Iwashita, Tomonori: *See—*
Mashimo, Yukio; Iwashita, Tomonori; Ichiyanagi, Toshikazu; Fukahori, Hidehiko; Fujino, Masahisa; and Sunouchi, Akio, 4,460,265, Cl. 354-448.000.
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Yamamoto, Makoto; Nakayama, Akira; and Iwata, Riso, 4,460,753, Cl. 526-62.000.
Izumi, Kazuo: *See—*
Ogawa, Hiroyasu; Izumi, Kazuo; and Shimazaki, Kenzi, 4,460,650, Cl. 428-389.000.
J. I. Case Company: *See—*
Albrecht, Allan J., 4,459,768, Cl. 37-118.00R.
J. M. Voith GmbH: *See—*
Thumm, Helmut; Bahr, Theodor; and Ortner, Herbert, 4,460,132, Cl. 241-46.110.
J. Osawa Camera Sales Co., Ltd.: *See—*
Watanabe, Yoshitsugu; and Koenuma, Katsutoshi, 4,459,743, Cl. 29-740.000.
Jaccod, Michel, to VALEO. Engine-driven auxiliary system for a motor vehicle. 4,460,056, Cl. 180-53.700.
Jack, Thomas R.: *See—*
Thompson, Bradley G.; and Jack, Thomas R., 4,460,043, Cl. 166-246.000.
Jackson, William S. Low-mount rack for panniers. 4,460,115, Cl. 224-32.00R.
Jacobs, Eli Soloman: *See—*
Russell, James T., 4,460,989, Cl. 369-45.000.
Jacobs, Erwin: *See—*
Schwabe, Ulrich; Jacobs, Erwin; and Scheibe, Adolf, 4,459,740, Cl. 29-576.00B.
Schwabe, Ulrich; and Jacobs, Erwin, 4,459,741, Cl. 29-576.00B.
Jacobs, Gunter: *See—*
Neuray, Dieter; Margotte, Dieter; Tresper, Erhard; and Jacobs, Gunter, 4,460,752, Cl. 525-462.000.
Jacobson, Amnon, to Ispra Protection Associates. Instantaneous production by ejection of a flexible foamed or solid rubber mass on a substrate. 4,460,711, Cl. 521-65.000.
Jacobson, Howard W., to Du Pont de Nemours, E. I., and Company. TiO_2 Pigment bearing a coating with fluoride ions and laminate and coating based thereon. 4,460,655, Cl. 428-530.000.
Jacobson, Robert L.: *See—*
Gibson, Kirk R.; Houston, Robert J.; Hughes, Thomas R.; and Jacobson, Robert L., 4,460,457, Cl. 208-139.000.
Jaffe, Wolfgang, to Singer Company, The. Magnetic laminae sections for single air gap motor. 4,460,839, Cl. 310-154.000.
Jager, Gerhard: *See—*
Jautelat, Manfred; Arlt, Dieter; and Jager, Gerhard, 4,460,793, Cl. 568-405.000.
Jagstaidt, Karlheinz: *See—*
Bochen, Bernd; and Jagstaidt, Karlheinz, 4,460,139, Cl. 248-68.100.
Janata, Jiri: *See—*
Horak, Vaclav; and Janata, Jiri, 4,460,747, Cl. 525-197.000.
Janikowski, Herbert E.: *See—*
Cox, Robert W.; Janikowski, Herbert E.; Walker, David L.; and Hands, David, 4,460,533, Cl. 264-236.000.
Janiszewski, Anthony T.: *See—*
Tsunemura, Kazuo; Iha, Kiyoshi; and Janiszewski, Anthony T., 4,460,030, Cl. 160-35.000.
Janocha, Siegfried: *See—*
Stegmeier, Gerhard; Janocha, Siegfried; and Hensel, Hartmut, 4,460,631, Cl. 428-35.000.
Janome Sewing Machine Co. Ltd.: *See—*
Eguchi, Yasukata, 4,459,928, Cl. 112-268.100.
Janssen, Lutz J.; and Schrader, Helmuth, to Ford Motor Company. Motor vehicle front end with an adjustable airflow device. 4,460,213, Cl. 296-1.00S.
Jantzen, Eric. Portable tool-chest. 4,460,085, Cl. 206-349.000.
Japan Organo Co., Ltd.: *See—*
Yoshida, Satoshi, 4,460,463, Cl. 210-222.000.
Jardinier, Pierre; and Simonnot, Jack, to Societe d'Etudes et de Recherches de Ventilation et d'Aerauliqueserva. Process for regulating the ventilation of a building and means for its use. 4,460,122, Cl. 236-44.00A.
Jarosz, John M.; and Panas, William R., to S&C Electric Company. Pressure-operated switch for a current-limiting, high-voltage interrupting module. 4,460,886, Cl. 337-148.000.
Jarrett, Robert B.: *See—*
Bynum, Byron G.; Gray, Randall C.; and Jarrett, Robert B., 4,460,865, Cl. 323-313.000.
Jautelat, Manfred; Arlt, Dieter; and Jager, Gerhard, to Bayer Aktiengesellschaft. Preparation of monochloromethyl ketones. 4,460,793, Cl. 568-405.000.
Jaworski, Eugene; Breslow, Jeffrey D.; Sakoda, Tom K.; and Disko, Harry, to Marvin Glass & Associates. Motor driven wheeled toy with floating driven axle. 4,459,776, Cl. 446-462.000.
Jean Walterscheid GmbH: *See—*
Geisthoff, Hubert, 4,460,077, Cl. 192-56.00R.

Jeffrey, Daniel J.: *See*—
Barford, Eric D.; Jeffrey, Daniel J.; and Raynor, Paul A., 4,460,490, Cl. 252-92.000.

Jenkins, Jon A.: *See*—
Deckert, Clinton L.; Jenkins, Jon A.; and Wilson, Larry L., 4,460,353, Cl. 604-31.000.

Jensen, Poul F.: *See*—
Kristiansen, Bjarne; Christiansen, Tage; Jensen, Poul F.; Pedersen, Bent; Kjaer, Jens B.; Kristensen, Kjeld; Jensen, Svend O.; Lindstroem, Poul; and Kjaer, Bjarne, 4,460,609, Cl. 426-39.000.

Jensen, Svend O.: *See*—
Kristiansen, Bjarne; Christiansen, Tage; Jensen, Poul F.; Pedersen, Bent; Kjaer, Jens B.; Kristensen, Kjeld; Jensen, Svend O.; Lindstroem, Poul; and Kjaer, Bjarne, 4,460,609, Cl. 426-39.000.

Jernberg Forgings Co.: *See*—
Giffune, Joseph W.; Halicky, Francis N.; and Fijol, Edward J., 4,459,880, Cl. 76-107.00R.

Jeyes Group Limited: *See*—
Barford, Eric D.; Jeffrey, Daniel J.; and Raynor, Paul A., 4,460,490, Cl. 252-92.000.

JGC Corporation: *See*—
Koumi, Noboru; Nishitani, Takeshi; Okayasu, Kazuo; and Takamizawa, Yoshikazu, 4,460,012, Cl. 137-454.600.

Jiang, Ching-Lin; and Taylor, David L., to Mostek Corporation. Non-volatile static random access memory cell. 4,460,978, Cl. 365-154.000.

Johannesson, Niels O.: *See*—
Poulsen, Finn; Samuelsen, Peter; and Johannesson, Niels O., 4,460,392, Cl. 55-385.00C.

Johnson & Johnson: *See*—
Smith, Rory J. M.; Sykes, Brenda M.; Terry, Roger S.; Coates, David A.; and Gower, Philip B., 4,459,706, Cl. 2-195.000.

Johnson & Johnson Products Inc.: *See*—
Sipos, Tibor, 4,460,564, Cl. 424-52.000.

Johnson, Kenneth L., to Betts Industries, Inc. Strain relief grommet. 4,460,805, Cl. 174-152.00G.

Johnson, Leo F.; and Kahng, Dawon, to AT&T Bell Laboratories. Method for planarizing patterned surfaces. 4,460,434, Cl. 156-643.000.

Johnson, Marvin M.: *See*—
McDaniel, Max P.; Sanbrano, John A.; and Johnson, Marvin M., 4,460,756, Cl. 526-106.000.

Johnson, Paul H., to Phillips Petroleum Company. Recovery of carbon black. 4,460,558, Cl. 423-450.000.

Johnson, Steven W.; and Smith, Robert H., to Atlantic Richfield Company. Process for separating crude oil from mixtures comprising finely divided inorganic solids, crude oil, and water. 4,460,452, Cl. 208-11.0LE.

Jojima, Teruomi: *See*—
Yanai, Toshiaki; Jojima, Teruomi; Kawakubo, Katsuhiko; Honma, Toyokuni; and Shindo, Masahiro, 4,460,597, Cl. 424-273.00P.

Jones, Addison B., to Rockwell International Corporation. High rate resist polymerization apparatus. 4,459,937, Cl. 118-50.100.

Jones, Archie L.: *See*—
Chen, Franklin M. C.; and Jones, Archie L., 4,460,364, Cl. 604-387.000.

Jones, Derrick F.; and Oldham, Keith, to Imperial Chemical Industries PLC. Nitrogen heterocycles. 4,460,584, Cl. 424-249.000.

Jones, Graham T.; Dow, Warren S.; and Wearne, Geoffrey L., to AHI Operations Limited. Method of forming coatings, coatings so formed and articles coated thereby. 4,460,635, Cl. 428-142.000.

Jones, John C.; Pates, Anthony R.; Dewsberry, Roland; and Ryan, Paul A., to University College Cardiff. Insulation. 4,460,645, Cl. 428-323.000.

Jones, Teddy L., to Sundstrand Corporation. Resettable force limiting device. 4,459,867, Cl. 74-89.150.

Jones, Vincent C., to Hewlett-Packard Company. Electronic computer with access to keyboard status information. 4,460,974, Cl. 364-900.000.

Jones, William D.: *See*—
McCaffrey, David J. A.; and Jones, William D., 4,460,476, Cl. 210-689.000.

Jorss, Norbert. Bottle table for labeling machines. 4,460,432, Cl. 156-567.000.

Josephs, Richard M.; Flowers, Ronald A.; and Young, Peter L., to Sperry Corporation. Rotating liquid nitrogen cooled substrate holder. 4,459,823, Cl. 62-268.000.

Jouffroy, Guy; and Martinot, Bernard, to Societe Chimique des Charbonnages-CdF Chimie. Energy-saving device for manufacturing polyethylene. 4,460,545, Cl. 422-131.000.

Judkins, Milton W. Shim for electrical receptacle or switch. 4,459,736, Cl. 29-526.00R.

Juillard, Yves, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Device for actuating heddle frames in weaving looms. 4,460,020, Cl. 139-82.000.

Julien, Paul C.: *See*—
Gruber, Robert J.; Julien, Paul C.; Bolte, Steven B.; and Koch, Ronald J., 4,460,672, Cl. 430-110.000.

Jung, Gerd: *See*—
Kutz, Heinrich; and Jung, Gerd, 4,459,838, Cl. 72-302.000.

Jung, Rolf: *See*—
Croseck, Hans-Henning; and Jung, Rolf, 4,460,326, Cl. 425-411.000.

Jurgens: Rainer; and Rathkamp, Hermann, to Christensen, Inc. Drill tool for deep wells. 4,460,053, Cl. 175-329.000.

Jurva, Edsel O.; and Goodin, Richard L., to Medtronic, Inc. Electrochemical cell for facilitating hermeticity leakage testing of an electrical feedthrough. 4,460,664, Cl. 429-181.000.

K & R Precision Instruments, Inc.: *See*—
Ruehlemann, Gerhard, 4,460,823, Cl. 235-105.000.

Kabbe, Hans-Joachim; Krause, Hans-Peter; and Sitt, Rudiger, to Bayer Aktiengesellschaft. Lipid absorption-inhibiting agents and their use. 4,460,607, Cl. 424-248.500.

Kabushiki Kaisha Akashi Seisakusho: *See*—
Onoguchi, Akira; and Yamazaki, Shigetomo, 4,460,827, Cl. 250-310.000.

Kabushiki Kaisha Kubota Seisakusho: *See*—
Wakita, Hiizu; and Uchida, Tadahiro, 4,460,351, Cl. 494-16.000.

Kabushiki Kaisha Kuken: *See*—
Shibata, Ryoichi, 4,460,049, Cl. 173-93.500.

Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
Kitamura, Yoshio, 4,459,893, Cl. 84-95.00C.

Kabushiki Kaisha Suwa Seikosha: *See*—
Yamada, Kuniharu; Gomi, Yoshiyuki; and Handa, Tsuneo, 4,460,936, Cl. 361-305.000.

Kabushiki Kaisha Tokai-Tika-Denki-Seisakusho: *See*—
Sasase, Naoshi; Inagaki, Nobukatsu; Hayashi, Yoshihiro; and Nishimura, Yuji, 4,460,198, Cl. 280-804.000.

Kada, Satoshi: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Kada, Satoshi; and Hashimoto, Masashi, 4,460,502, Cl. 260-112.50R.

Kadogaki, Tsuneaki, to Olympus Optical Co. Ltd. Test requisition card for automatic analyzing apparatus. 4,460,824, Cl. 235-375.000.

Kaeser, Charles: *See*—
Ducros, Luc; Navarro, Roger; and Kaeser, Charles, 4,460,109, Cl. 222-94.000.

Kagaya, Koji: *See*—
Tsubakihara, Osamu; Kagaya, Koji; Okada, Hiroo; and Kawashima, Katsuhiro, 4,460,033, Cl. 164-454.000.

Kageyama, Akira: *See*—
Kitoh, Makoto; Tajima, Tetsuo; Terunuma, Noboru; Mitsugi, Noboru; and Kageyama, Akira, 4,460,535, Cl. 264-262.000.

Kahng, Dawon: *See*—
Johnson, Leo F.; and Kahng, Dawon, 4,460,434, Cl. 156-643.000.

Kai, Isao: *See*—
Haraga, Tetsuo; Nomura, Ryuji; Kai, Isao; and Yamasaki, Motoyoshi, 4,460,629, Cl. 427-221.000.

Kaiser, Victor; Heck, Gerard; and Lepetit, Philippe, to Compagnie Francaise d'Etudes et de Construction "Technip". Method for producing purified ethylene through thermo-coupled distillation and ethylene-producing apparatus using the said method. 4,460,396, Cl. 62-28.000.

Kaken Pharmaceutical Co., Ltd.: *See*—
Kawauchi, Hiroshi, 4,460,576, Cl. 424-177.000.

Kakii, Toshiaki: *See*—
Matsumoto, Michito; Kakii, Toshiaki; and Toda, Yuichi, 4,460,820, Cl. 219-385.000.

Kalil, Dennis G. S., to Kalil, Ghalil Trevor; and Deeb, Donald Joseph. Container for combustible. 4,460,377, Cl. 44-40.000.

Kalil, Ghalil Trevor: *See*—
Kalil, Dennis G. S., 4,460,377, Cl. 44-40.000.

Kamata, Isao; and Oyama, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Gas-insulated switching apparatus. 4,460,937, Cl. 361-333.000.

Kamei, Tsuneaki: *See*—
Abe, Katsuo; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; Mitani, Masao; Fujimoto, Kazuyuki; and Hiratsuka, Shigetoshi, 4,460,494, Cl. 252-512.000.

Kamens, Ernest R., to Pennwalt Corporation. Unsaturated polyester resin foams using inorganic iron salts. 4,460,714, Cl. 521-122.000.

Kamijo, Yoshimi: *See*—
Kano, Mitsuru; and Kamijo, Yoshimi, 4,460,496, Cl. 252-518.000.

Kamiya, Sigeru; Takagi, Shigeru; Nozawa, Masaei; Tomita, Masahiro; and Hayashi, Nobutoshi, to Nippon Soken, Inc. Combustion burner apparatus. 4,459,805, Cl. 60-303.000.

Kanayama, Yoshio, to Sharp Kabushiki Kaisha. Ink jet head with welded components. 4,460,906, Cl. 346-140.00R.

Kanazawa, Kiyoto: *See*—
Hosaka, Akihiko; Okuyama, Kiyotaka; and Kanazawa, Kiyoto, 4,460,651, Cl. 428-402.000.

Kanbe, Junichiro: *See*—
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,460,669, Cl. 430-57.000.
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,460,670, Cl. 430-57.000.

Kanebo, Ltd.: *See*—
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,460,648, Cl. 428-373.000.
Koyama, Hiroaki; and Shimizu, Shigeo, 4,460,730, Cl. 524-403.000.

Kanebo Synthetic Fibers Ltd.: *See*—
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,460,648, Cl. 428-373.000.

Kanegafuchi Chemical Industry Company, Ltd.: *See*—
Ohashi, Takehisa; Shimazaki, Masami; Nomura, Kenji; Nose, Yasushi; and Watanabe, Kiyoshi, 4,460,780, Cl. 548-201.000.

Kaneko, Hiromitsu: *See*—
Kinugasa, Manabu; and Kaneko, Hiromitsu, 4,460,522, Cl. 264-0.500.

Kaneko, Mitsunori: *See*—
Inoue, Tomoaki; Ishikawa, Yoichi; and Kaneko, Mitsunori, 4,460,451, Cl. 204-415.000.

Kanno, Fumio, to Citizen Watch Co. Timepiece stepping motor drive circuit with stepping failure compensation. 4,460,282, Cl. 368-157.000.

Kano, Mitsuru; and Kamijo, Yoshimi, to Alps Electric Co., Ltd. Paste for forming a transparent, conductive film. 4,460,496, Cl. 252-518.000.

Kantor, Sherwood: *See*—
Bassetti, Larry W.; Hooker, Ross B., III; and Kantor, Sherwood, 4,460,909, Cl. 346-160.000.

Kanzelberger, James C., to Contemporary, Inc. Debossable plastic plaque with fine jewelry appearance. 4,459,772, Cl. 40-152.100.

Kao Soap Co., Ltd.: *See*—
Abe, Yoshiaki; and Tsushima, Rikio, 4,460,566, Cl. 424-70.000.

Kapiloff, Anita G.; and Hatch, Randolph T., to B. F. Goodrich Company, The. Scale inhibitor for reverse osmosis water purification system. 4,460,472, Cl. 210-639.000.

Kapitanov, Boris A.; Blatov, Valery G.; Dmitriev, Viktor P.; Enikeev, Gumer K.; Ermilov, Mikhail A.; Soldatov, Anatoly I.; and Cheretaev, Vladimir N. Device for magnetizing the fuel mixture of an internal combustion engine. 4,460,516, Cl. 261-1.000.

Kaplan, Jean-Pierre; and George, Pascal, to Synthelabo. 6-Methyl-2-(4-methylthiophenyl)-imidazo[1,2-a]-pyridine-3-N,N-dimethylacetamide. 4,460,592, Cl. 424-256.000.

Kaplan, Lester J.; McMillan, Moses W.; and Szmuszkovicz, Jacob, to Upjohn Company, The. Adjacently substituted ketal derivatives of cycloalkane-amide analgesics. 4,460,600, Cl. 424-274.000.

Kapralis, Imants P.; and Krukle, Harry. Trigger to controllably initiate crystallization. 4,460,546, Cl. 422-245.000.

Kapura, Edward M.; and Goode, Henry C., to PPG Industries, Inc. Float glass method and apparatus with enhanced lateral traction for attenuation. 4,460,397, Cl. 65-99.500.

Karaki, Kouichi, to Olympus Optical Co. Ltd. Surgical laser system. 4,459,986, Cl. 128-303.100.

Karanewsky, Donald S., to E. R. Squibb & Sons, Inc. Thiazine and thiazepine containing compounds. 4,460,579, Cl. 424-200.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Bogucki-Land, Bogdan, 4,459,724, Cl. 26-13.000.

Karle, David A., to American Sterilizer Company. Apparatus for indicating whether the interior of a container has been sterilized during a sterilization process. 4,459,936, Cl. 116-207.000.

Karol, Frederick J.: *See*—
Williams, Gary H.; and Karol, Frederick J., 4,460,755, Cl. 526-84.000.

Karol, Thomas J.; and Sung, Rodney L., to Texaco Inc. Process for stabilizing fuels and stabilized fuel produced thereby. 4,460,381, Cl. 44-63.000.

Karolek, Neil C.: *See*—
Inkmann, Mark S.; Karolek, Neil C.; Reichard, John G.; and Inkmann, Donald A., 4,460,054, Cl. 177-149.000.

Kasagi, Takao: *See*—
Inagaki, Mitsuo; Ito, Seitoku; and Kasagi, Takao, 4,459,817, Cl. 62-196.300.

Kasting, Edward W., to Cummins Engine Company, Inc. Lubrication pump mounting assembly. 4,459,950, Cl. 123-195.00A.

Kastl, Melvin R.: *See*—
Sartain, Donald W.; Paxton, Lee C.; and Kastl, Melvin R., 4,459,711, Cl. 4-502.000.

Katagiri, Masayoshi; and Kondo, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Pad-wear-limit warning device for disc brake. 4,460,067, Cl. 188-1.110.

Katayama, Hirohiko, to Canon Kabushiki Kaisha. Registration method of registered words for use in a speech recognition system. 4,461,023, Cl. 381-43.000.

Kato, Kiminari, to NGK Insulators, Ltd. Ceramic rotor and manufacturing process therefor. 4,460,527, Cl. 264-56.000.

Kato, Osamu: *See*—
Takashima, Hiroaki; Kato, Osamu; Uemura, Seiichi; Yamamoto, Shunichi; and Hirose, Takao, 4,460,557, Cl. 423-447.100.

Katou, Takashi: *See*—
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Mizutani, Shunsuke; and Sakakibara, Yozo, 4,460,518, Cl. 261-39.00A.

Katz, Lewis J. Method and system for seismic continuous bit positioning. 4,460,059, Cl. 181-102.000.

Kaufmann, Rudolf: *See*—
Huber, Peter; Kaufmann, Rudolf; and Burkhardt, Juurgen, 4,460,726, Cl. 524-114.000.

Kawahara, Hiroshi: *See*—
Azegami, Hitoshi; Kawahara, Hiroshi; and Shibata, Fujio, 4,460,653, Cl. 428-425.900.

Kawahito, Tsuneyoshi: *See*—
Abe, Katsuo; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; Mitani, Masao; Fujimoto, Kazuyuki; and Hiratsuka, Shigetoshi, 4,460,494, Cl. 252-512.000.

Kawai, Tohru; and Masunaga, Makoto, to Canon Kabushiki Kaisha. Electromagnetically driven diaphragm device. 4,460,253, Cl. 354-446.000.

Kawakubo, Katsuhiko: *See*—
Yanai, Toshiaki; Jojima, Teruomi; Kawakubo, Katsuhiko; Honma, Toyokuni; and Shindo, Masahiro, 4,460,597, Cl. 424-273.00P.

Kawashima, Katsuhiro: *See*—
Saeki, Tsuyoshi; Kawashima, Katsuhiro; Murata, Mitsuo; and Oota, Mituhiro, 4,460,034, Cl. 164-478.000.
Tsubakihara, Osamu; Kagaya, Koji; Okada, Hiroo; and Kawashima, Katsuhiro, 4,460,033, Cl. 164-454.000.

Kawashima, Seiichi: *See*—
Tani, Mitsukiyo; and Kawashima, Seiichi, 4,460,817, Cl. 219-85.00D.

Kawauchi, Hiroshi, to Kaken Pharmaceutical Co., Ltd.; and Suntory Limited. Peptide and hormone agent containing the same as effective ingredient. 4,460,576, Cl. 424-177.000.

Kawazu, Hideyuki: *See*—
Yamazaki, Masaru; Miyashita, Kiyoshi; Kawazu, Hideyuki; and Ishimoto, Osamu, 4,460,269, Cl. 355-14.0SH.

Kay, Ira W.: *See*—
Keilbach, Joseph R.; Lehrach, Ronald P. C.; and Kay, Ira W., 4,459,845, Cl. 73-113.000.

Kaya, Azmi; and Willey, Michael S., to Babcock & Wilcox Company, The. Supervisory control of chilled water temperature. 4,459,818, Cl. 62-201.000.

Kazama, Toyoki: *See*—
Sukigara, Kunio; and Kazama, Toyoki, 4,460,673, Cl. 430-128.000.

Kazaoka, Kenichi; and Yamada, Yukifumi, to Aisin Seiki Kabushiki Kaisha. Vertically adjustable seat for vehicles. 4,460,144, Cl. 248-397.000.

Keelen, William R.: *See*—
Boehm, Russell W.; Keelen, William R.; and Rees, Herbert, 4,460,534, Cl. 264-246.000.

Keilbach, Joseph R.; Lehrach, Ronald P. C.; and Kay, Ira W., to United Technologies Corporation. Methods for determining rate of fuel flow to an engine. 4,459,845, Cl. 73-113.000.

Keith, Alec D.; and Snipes, Wallace, to Key Pharmaceuticals, Inc. Polymeric diffusion matrix containing propranolol. 4,460,562, Cl. 424-28.000.

Keith, Charles H., to Celanese Corporation. Fibrets suitable for paper opacification. 4,460,647, Cl. 428-369.000.

Keith, Charles H.: *See*—
Browne, Colin L.; Keith, Charles H.; and Bohlander, Peter J., 4,460,001, Cl. 131-338.000.

Keith, Earl K., to Dow Chemical Company, The. Method of preparing magnesium alloy particles. 4,460,407, Cl. 75-0.50C.

Kelbert, Adam: *See*—
Dolata, Hans; Meyle, Werner; Kelbert, Adam; and Nitschmann, Karl, 4,459,890, Cl. 83-834.000.

Kelland, John W.: *See*—
Candlin, John P.; Kelland, John W.; and Law, Peter L., 4,460,700, Cl. 502-104.000.

Keller, Josef; and Eckhardt, Walter. Apparatus for forming transverse seam welds or separated transverse seam welds in tubular or semitubular plastic film webs. 4,460,431, Cl. 156-515.000.

Keller, Pierre: *See*—
Buser, Werner; Keller, Pierre; and Munch, Walter, 4,460,869, Cl. 324-200.000.

Keller, Rogenald J. Deep-sea fisherman's chair. 4,460,216, Cl. 297-217.000.

Kelly, Hugh-Peter G. Linear motor. 4,460,855, Cl. 318-135.000.

Kelly, James P., to McGraw-Edison. Light fixture housing including snap latch. 4,460,947, Cl. 362-374.000.

Kelly, Lawrence F.: *See*—
DeGraw, Joseph I.; Kelly, Lawrence F.; and Sirotnak, Francis M., 4,460,591, Cl. 424-251.000.

Kendall Company, The: *See*—
Bates, David A., 4,460,362, Cl. 604-323.000.

Kendall, Stanley E., to American Home Products Corporation. Aerosol rubbing compound. 4,460,489, Cl. 252-90.000.

Kennemer, James C.: *See*—
Goodfellow, Anthony E. B.; Kennemer, James C.; and Donlevy, Timothy J., 4,460,119, Cl. 229-68.00R.

Kern, Robert H.; and Levesque, Wilfred P., to Kernco, Inc. Ion pump. 4,460,317, Cl. 417-49.000.

Kernco, Inc.: *See*—
Kern, Robert H.; and Levesque, Wilfred P., 4,460,317, Cl. 417-49.000.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Blasius, Ewald; and Nilles, Karl-Heinz, 4,460,474, Cl. 210-679.000.
Sameh, Ali; and Haag, Jurgen, 4,460,547, Cl. 423-7.000.

Kerr, Howard A.; and Winchell, David F., to AT&T Bell Laboratories. Conference routing arrangement. 4,460,807, Cl. 179-18.0BC.

Kerr-McGee Chemical Corporation: *See*—
Rado, Theodore A., 4,460,550, Cl. 423-79.000.

Kerr-McGee Coal Corporation: *See*—
Moon, Jack L.; and Tompkins, John C., 4,460,308, Cl. 414-786.000.

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Schuetz, James E.; and Keskey, William H., 4,460,029, Cl. 152-359.000.

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Kikuchi, Hisashi: *See*—
Kozai, Katsuya; Fujita, Yoshihiro; Shibata, Tadayoshi; Kikuchi, Hisashi; Nakai, Hiroshi; and Ichii, Hirokazu, 4,460,255, Cl. 354-86.000.

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Park, Yeun H.; Woo, Jong L.; and Kim, Hak M., 4,460,649, Cl. 428-373.000.

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Cabell, Paul C.; and Kimmich, Robert L., 4,459,821, Cl. 62-239.000.

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Terano, Misoru; Kimura, Kouhei; Murai, Atsushi; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,460,701, Cl. 502-104.000.

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Steer, Peter L.; and Edwards, John V., 4,460,363, Cl. 604-336.000.

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Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,459,953, Cl. 123-198.00F.

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Ikeda, Tsutomu; Iwamoto, Masanori; and Kizu, Shuji, 4,461,027, Cl. 382-9.000.

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Winkelbauer, Howard M.; Petrak, Daniel R.; Kleeb, Thomas R.; and Wang, Ke-Chin, 4,460,528, Cl. 264-65.000.

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Robin, Seymour; and Klein, Yosef, 4,460,894, Cl. 343-700.0MS.

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Theilen, Rolf; and Kleinhanns, Manfred, 4,460,287, Cl. 400-213.100.

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Honrath, Kurt, 4,459,947, Cl. 123-90.270.

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Orlando, Charles M.; and Klopfer, Howard J., 4,460,800, Cl. 568-764.000.

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Weiss, Hermann; and Klotz, Erhard, 4,461,016, Cl. 378-23.000.

Knauer, Ulrich: *See*—
Feuerbaum, Hans-Peter; and Knauer, Ulrich, 4,460,866, Cl. 324-57.0PS.

Knepper, Ronald W., to International Business Machines Corporation. Memory array with switchable upper and lower word lines. 4,460,984, Cl. 365-190.000.

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Rauser, Jan A. I.; and Knudsen, Gunnar, 4,460,425, Cl. 156-244.230.

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Ko, Wen-Hsiung; Fung, Cliff D. J.; and Shen, Wei-Jiun, to Case Western Reserve University. CMOS Bridge for capacitive pressure transducers. 4,459,856, Cl. 73-754.000.

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Fukushima, Isao; Kuwahara, Kazuyoshi; Nishijima, Hideo; Kobori, Yasunori; and Itoigawa, Keiichi, 4,460,953, Cl. 363-62.000.

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Falk, Lars I., 4,459,806, Cl. 60-327.000.

Koenuma, Katsutoshi: *See*—
Watanabe, Yoshitsugu; and Koenuma, Katsutoshi, 4,459,743, Cl. 29-740.000.

Koga, Toshio: *See*—
Hirano, Akira; and Koga, Toshio, 4,460,923, Cl. 358-136.000.

Koga, Toshiyuki; and Ishijima, Hiroshi, to Seiko Instruments & Electronics Ltd. Fluorescent X-ray device. 4,461,017, Cl. 378-044.000.

Kohkame, Hisashi: *See*—
Nishikawa, Akio; Shitara, Masashi; Era, Susumu; Fukushima, Toshiaki; Suzuki, Hiroshi; and Kohkame, Hisashi, 4,460,783, Cl. 548-549.000.

Kohler, Ramon C.; and Eichorst, John H., Jr., to Caterpillar Tractor Co. Floating planet gear system. 4,459,876, Cl. 74-788.000.

Kohlert, Erich: *See*—
Weber, Robert; Koppl, Alois; Forner, Siegfried; Kohlert, Erich; and Muller, Otto, 4,460,920, Cl. 358-100.000.

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Koiso, Nagatugu: *See*—
Imura, Ryo; Ikeda, Tadashi; Suzuki, Ryo; Koiso, Nagatugu; Takeuchi, Teruaki; Umezaki, Hiroshi; and Sugita, Yutaka, 4,460,412, Cl. 148-1.500.

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Koizumi, Mitsuyoshi; Akiyama, Nobuyuki; and Ohshima, Yoshimasa, to Hitachi, Ltd. Test apparatus for defects of plate. 4,460,273, Cl. 356-237.000.

Koller, Manfred: *See*—
Muller, Gerd; Koller, Manfred; and Sydekum, Heinz, 4,460,074, Cl. 188-322.140.

Kolon Industries Inc.: *See*—
Park, Yeun H.; Woo, Jong L.; and Kim, Hak M., 4,460,649, Cl. 428-373.000.

Kolze, Lawrence A., to Eaton Corporation. Freeze protection valve. 4,460,006, Cl. 137-62.000.

Komada, Hideaki: *See*—
Terada, Tomohiko; and Komada, Hideaki, 4,459,959, Cl. 123-446.000.

Komatsu, Hiroyuki: *See*—
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,459,953, Cl. 123-198.00F.

Komiyama, Makoto: *See—*
Hirai, Hidefumi; Komiyama, Makoto; and Hara, Susumu, 4,460,384, Cl. 55-36.000.

Kondo, Katsuya; and Tajima, Shigeru, to Sumitomo Kinzoku Kogyo Kabushiki Gaisha. Method of controlling mill motors speeds in a cold tandem mill. 4,460,852, Cl. 318-67.000.

Kondo, Ryuji: *See—*
Hagiwara, Takaaki; Itoh, Yokichi; Kondo, Ryuji; Yatsuda, Yuji; and Minami, Shinichi, 4,460,980, Cl. 365-184.000.

Kondo, Toshio: *See—*
Katagiri, Masayoshi; and Kondo, Toshio, 4,460,067, Cl. 188-1.110.

Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, to Kanebo, Ltd.; and Kanebo Synthetic Fibers Ltd. Porous bicomponent acrylic synthetic fibers comprising cellulose acetate in an acrylic matrix and method for producing said fibers. 4,460,648, Cl. 428-373.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Mizukura, Noboru; Ikeuchi, Satoru; Suginaka, Shunji; and Fujita, Noriko, 4,460,682, Cl. 430-559.000.
Uehara, Masafumi; Yamamoto, Takeshi; Yamazaki, Atsuo; and Aoki, Tohru, 4,460,674, Cl. 430-190.000.

Kopp, Walter; and Saalmuller, Karl-Heinz, to Siemens Aktiengesellschaft. Developing device for developing charge images on a charge image carrier. 4,460,266, Cl. 355-3.0DD.

Koppen, Kirk J., to Koppen and Lethem AG. Control apparatus for fluid operated systems. 4,459,807, Cl. 60-452.000.

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Koppen, Kirk J., 4,459,807, Cl. 60-452.000.

Koppers Company, Inc.: *See—*
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Koppl, Alois: *See—*
Weber, Robert; Koppl, Alois; Forner, Siegfried; Kohlert, Erich; and Muller, Otto, 4,460,920, Cl. 358-100.000.

Korhonen, Antti S.; Sirvio, Eero H.; Sulonen, Martti S.; and Sundquist, Heikki A., to Kymi Kymmene Oy. Method for nitriding materials at low pressures using a glow discharge. 4,460,415, Cl. 148-16.600.

Kortenbrede, Ludger: *See—*
Waterkamp, Manfred; and Kortenbrede, Ludger, 4,459,833, Cl. 70-227.000.

Kosmas, Paulette U.; and Lawlor, Donna M. Seat protection device for skiers. 4,459,703, Cl. 2-48.000.

Kotsanis, Constantine, to Endoscopy Surgical Systems, Inc. Medical retractor device. 4,459,978, Cl. 128-20.000.

Koumi, Noboru; Nishitani, Takeshi; Okayasu, Kazuo; and Takamizawa, Yoshikazu, to JGC Corporation; and OKA Valve Mfg. Co., Ltd. Cartridge-type valve. 4,460,012, Cl. 137-454.600.

Kovensky, William: *See—*
Chance, Glenn G.; and Kovensky, William, 4,460,202, Cl. 285-333.000.

Kowalik, Matthew F., to A. B. Dick Company. Adjustment structure for master holder. 4,459,913, Cl. 101-415.100.

Kowalik, Ralph M.: *See—*
Peiffer, Dennis G.; Lundberg, Robert D.; Kowalik, Ralph M.; and Turner, S. Richard, 4,460,758, Cl. 526-287.000.

Kowalski, Joseph W., to B-Line Systems, Inc. Fastener. 4,460,299, Cl. 411-85.000.

Koyama, Hiroaki; and Shimizu, Shigeo, to Kanebo, Ltd. Composition containing a powder of an inorganic material. 4,460,730, Cl. 524-403.000.

Kozai, Katsuya; Fujita, Yoshihiro; Shibata, Tadayoshi; Kikuchi, Hisashi; Nakai, Hiroshi; and Ichii, Hirokazu, to Fuji Photo Film Co., Ltd. Instant camera. 4,460,255, Cl. 354-86.000.

Koziol, Konrad; and Wenk, Erich, to Conradty GmbH & Co. Metallelektroden KG. Coated valve metal anode for the electrolytic extraction of metals or metal oxides. 4,460,450, Cl. 204-290.00F.

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Donath, Gerhard, 4,460,464, Cl. 210-223.000.
Weber, Robert; Koppl, Alois; Forner, Siegfried; Kohlert, Erich; and Muller, Otto, 4,460,920, Cl. 358-100.000.

Krasney, Robert L. Liquid pitcher with mixer. 4,460,279, Cl. 366-247.000.

Krause, Hans-Peter: *See—*
Kabbe, Hans-Joachim; Krause, Hans-Peter; and Sitt, Rudiger, 4,460,607, Cl. 424-248.500.

Krawczyk, Gregory J.: *See—*
Burt, David L.; and Krawczyk, Gregory J., 4,460,015, Cl. 137-625.500.

Kremer, Ross A.: *See—*
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Krevitz, Kenneth: *See—*
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Krieger, Friedrich, to Salzitter AG. Lifting device for nuclear power plants. 4,460,536, Cl. 376-268.000.

Kristensen, Kjeld: *See—*
Kristiansen, Bjarne; Christiansen, Tage; Jensen, Poul F.; Pedersen, Bent; Kjaer, Jens B.; Kristensen, Kjeld; Jensen, Svend O.; Lindstroem, Poul; and Kjaer, Bjarne, 4,460,609, Cl. 426-39.000.

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Kroske, William B.: *See—*
Cochran, Charles D.; Clardy, Michael S.; and Kroske, William B., 4,459,839, Cl. 72-412.000.

Krueger, Harvey R., to Reynolds Products Inc. Ice cube making apparatus. 4,459,824, Cl. 62-347.000.

Kruger, Wolfgang: *See—*
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Krukle, Harry: *See—*
Kapralis, Imants P.; and Krukle, Harry, 4,460,546, Cl. 422-245.000.

Krull, Irwin H.; and Tisue, James G. Electronic circuit for measuring and displaying ion concentration in fluid. 4,460,967, Cl. 364-497.000.

Krynski, Edward P., to Mylstar Electronics, Inc. Drop target assembly for pinball game. 4,460,175, Cl. 273-127.00R.

Kubota Limited: *See—*
Sakano, Kenji; Sakanaka, Hiroo; and Okamoto, Kazutoshi, 4,459,966, Cl. 123-573.000.

Kubota, Naohiro: *See—*
Leistner, William E.; Minagawa, Motonobu; Kubota, Naohiro; Shibata, Toshihiro; and Arata, Ryozo, 4,460,725, Cl. 524-102.000.

Kueenzle, Paul; and Voss, Karl-Heinz, to Siemens Aktiengesellschaft. Load break switch drive mechanism. 4,460,813, Cl. 200-146.00R.

Kuehnle, Manfred R. Orbital method and apparatus for making helical races. 4,460,297, Cl. 409-293.000.

Kuhns, Abe B., to E-Z Trail, Inc. Vehicle side extension. 4,460,214, Cl. 296-33.000.

Kujas, Erich F., to RCA Corporation. Negative hydrogen electrode comprising an alloy palladium and rutherium. 4,460,660, Cl. 429-40.000.

Kulhavy, Joseph A. Digital depth indicator for earth drilling apparatus. 4,461,015, Cl. 377-24.000.

Kulka, Siegfried: *See—*
Schmidt, Peter; and Kulka, Siegfried, 4,460,899, Cl. 343-841.000.

Kunikane, Makoto; Abe, Michiharu; and Umehara, Masaakira, to Ricoh Co., Ltd. Optical information recording medium. 4,460,665, Cl. 428-199.000.

Kunkle, Calvin S., to FMC Corporation. Manually operable override for use with a linear actuator. 4,460,154, Cl. 251-130.000.

Kunz, Gary L.: *See—*
Gessel, James M.; Kunz, Gary L.; and Scheidenhelm, E. Louis, 4,459,797, Cl. 56-220.000.

Kunz Maschinen- und Apparatebau GmbH: *See—*
Kunz, Udo, 4,460,134, Cl. 242-68.400.

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Kurashiki Boseki Kabushiki Kaisha: *See—*
Kobayashi, Hiroyasu; Inoue, Akihisa; and Tsujii, Katsushi, 4,460,633, Cl. 428-110.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Igarashi, Yuriko; and Okada, Yoshio, 4,460,722, Cl. 523-206.000.
Terauchi, Takashi; Sato, Koji; and Hoshi, Shoichi, 4,460,705, Cl. 502-303.000.

Kurland, Marvin; Oliva, Ferdinand P.; and Wilson, Terry L., to Singer Company, The. Arrangement for signaling presser bar position. 4,459,927, Cl. 112-237.000.

Kushibiki, Junichi: *See—*
Chubachi, Noriyoshi; and Kushibiki, Junichi, 4,459,852, Cl. 73-606.000.

Kusuki, Yoshihiro: *See—*
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; and Shimazaki, Hiroshi, 4,460,526, Cl. 264-41.000.

Kutz, Heinrich; and Jung, Gerd, to SMS Schloemann-Siemag Aktiengesellschaft. Gripping head of a sheet stretcher with a centering device. 4,459,838, Cl. 72-302.000.

Kuwahara, Kazuyoshi: *See—*
Fukushima, Isao; Kuwahara, Kazuyoshi; Nishijima, Hideo; Kobori, Yasunori; and Itoigawa, Keiichi, 4,460,953, Cl. 363-62.000.

Kuwayama, Shigeo: *See—*
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Kymi Kymmene Oy: *See—*
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Kyowa Gas Chemical Industry Co., Ltd.: *See—*
Takematsu, Tetsuo; Segawa, Hirozo; Miura, Takamaro; Ataka, Toshiei; Chatani, Michio; and Nakamura, Akira, 4,460,403, Cl. 71-93.000.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Furukawa, Tadayasu; Taguchi, Tokuichi; Yamamoto, Kazuhiro; and Ohta, Shigenori, 4,460,615, Cl. 426-657.000.

Labbe, Francis A. M.; and Nowers, John R., to Molins Limited. Manufacture of cigarettes. 4,459,998, Cl. 131-62.000.

Labes, Mortimer M.; and Lee, Heewon, to Temple University. Low viscosity lyotropic cholesteric liquid crystal compositions. 4,460,492, Cl. 252-299.600.

Laboratoires Merck Sharp & Dohme - Chibret: *See—*
Paoletti, Jean-Claude, 4,460,090, Cl. 206-540.000.

LaBouff, Gary A., to Deere & Company. Heat insulated piston assembly and method of assembling. 4,459,900, Cl. 92-189.000.

Laeis-Werke AG.: *See—*
Croseck, Hans-Henning; and Jung, Rolf, 4,460,326, Cl. 425-411.000.

Lagana', Vincenzo: *See—*
Di Pietro, Raffaele; Paggini, Alberto; and Lagana', Vincenzo, 4,460,378, Cl. 44-54.000.

LaHann, Thomas R.: *See—*
Buckwalter, Brian L.; and LaHann, Thomas R., 4,460,602, Cl. 424-322.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Devalois, Serge; Hersant, Thierry; Goursat, Albert G.; and Weisang, Francois, 4,460,409, Cl. 75-96.000.
Paravigna, Zivko; Boursaud, Jack; and Tassart, Christian, 4,460,010, Cl. 137-259.000.

Laiteries E. Bridel: *See—*
Rialland, Jean P.; and Barbier, Jean P., 4,460,616, Cl. 426-580.000.

Lake Region Products, Inc.: *See—*
Notermann, Walter F., 4,460,344, Cl. 441-73.000.

Lambert, David A.: *See—*
Hampton, Dean A.; and Lambert, David A., 4,460,993, Cl. 370-84.000.

Lambeth, David N.: *See—*
Greivenkamp, John E., Jr.; Lambeth, David N.; and Meyer, James W., 4,460,259, Cl. 354-403.000.

Lamendour, Andre . Track for soft ground. 4,460,291, Cl. 404-35.000.

Lampsat, Bruno G.: *See—*
Tseng, Wu-Yang; and Lampsat, Bruno G., 4,460,315, Cl. 416-216.000.

Landa, Benzion, to Savin Corporation. Centrifugal ball elevator for microballistic printer. 4,460,286, Cl. 400-118.000.

Landa, Benzion, to Savin Corporation. Method for developing latent electrostatic images for gap transfer to a carrier sheet. 4,460,667, Cl. 430-30.000.

Landgraf, Hermann; Schuss, Werner; and Worschischek, Rainer, to Siemens Aktiengesellschaft. Dental handpiece. 4,460,337, Cl. 433-29.000.

Lane, David; and Sergeant, Ronald G., to AMP Incorporated. Pitch change connector. 4,460,228, Cl. 339-99.00R.

Lang, Kurt: *See—*
Stahlecker, Fritz; and Lang, Kurt, 4,459,801, Cl. 57-412.000.

Lang, Mark S. Solar bottle. 4,459,974, Cl. 126-440.000.

Langford, Joan M. Garment with interfacing extended to form lower body suit. 4,459,705, Cl. 2-105.000.

Langlet Weber KG: *See—*
Schultze, Werner; and Weber, Knut, Jr., 4,460,529, Cl. 264-81.000.

Langston, Jimmy B.: *See—*
Wong, Patrick S.; Langston, Jimmy B.; and Leeper, Harold M., 4,460,367, Cl. 604-890.000.

Larking, Alfred E. R. Drawer apparatus. 4,460,222, Cl. 312-286.000.

LaRosa, Richard: *See—*
Freyre, Frederick W.; and LaRosa, Richard, 4,460,250, Cl. 350-358.000.

Latapie, Jean-Francois, to Equipements Automobiles Marchal. Electronic device receiving an ignition signal from an internal combustion engine and supplying a signal positioned in relation to top dead center. 4,459,958, Cl. 123-425.000.

Laurel Bank Machine Co., Ltd.: *See—*
Furuya, Katusuke, 4,460,004, Cl. 133-8.00R.

Lautenschlager, Hans-Heiner; Welter, Andre; Hilboll, Gerd; Winkelmann, Johannes; Prop, Gerrit; Brekle, Axel; and Zierenberg, Ottfried, to A. Nattermann & Cie GMBH. Triphenylimidazolyloxyalkanoic acids and their derivatives and a process for the treatment of thromboembolic, inflammatory and/or atheriosclerotic diseases. 4,460,598, Cl. 424-273.00R.

Lauterbach, Jerre F.; and Schlamadinger, Hans J., to Cummins Engine Company, Inc. Turbocharger assembly including a flexible anti-friction bearing support. 4,460,284, Cl. 384-126.000.

Laval, Michel: *See—*
Allemand, Robert; Laval, Michel; and Parot, Pierre, 4,460,830, Cl. 250-370.000.

Lavelle, Joseph A.: *See—*
Emmons, William D.; and Lavelle, Joseph A., 4,460,625, Cl. 427-136.000.

Law, Peter L.: *See—*
Candlin, John P.; Kelland, John W.; and Law, Peter L., 4,460,700, Cl. 502-104.000.

Lawler, Joseph A.; and Viero, Lawrence G., to General Signal Corporation. Temperature controlled oven with internal filter. 4,460,332, Cl. 432-72.000.

Lawlor, Donna M.: *See—*
Kosmas, Paulette U.; and Lawlor, Donna M., 4,459,703, Cl. 2-48.000.

Lawton, Richard H.: *See—*
Brandt, Arnold W.; Fox, David H.; and Lawton, Richard H., 4,459,968, Cl. 123-643.000.

Layman, Douglas C., to IVAC Corporation. Fluid pressure monitoring system. 4,460,355, Cl. 604-118.000.

Lazarre, Flavien, to Societe Nationale Elf Aquitaine (Production). Apparatus for dispersing flammable gases into the atmosphere. 4,460,128, Cl. 239-533.100.

Leach & Garner Company: *See—*
Richard, Armand C.; Gayton, Michael A.; and D'Ambra, Anthony F., 4,459,829, Cl. 63-12.000.

Leal, Joseph M.; and Malone, James M., to U.S. Manufacturing Company. Artificial limb prosthesis. 4,459,709, Cl. 3-2.000.

LeBron, Inc.: *See—*
Miller, David A., 4,460,941, Cl. 362-158.000.

Lednicer, Daniel, to Upjohn Company, The. 4-Amino-4-aryl-cyclohexanones. 4,460,604, Cl. 424-330.000.

Lee, Chi-long; and Spells, Sherwood, to Dow Corning Corporation. Microwave cured silicone elastomeric foam. 4,460,713, Cl. 521-122.000.

Lee, Chunghsin: *See—*
Oettinger, Peter E.; and Lee, Chunghsin, 4,460,831, Cl. 250-492.200.

Lee, Heewon: *See—*
Labes, Mortimer M.; and Lee, Heewon, 4,460,492, Cl. 252-299.600.

Lee, Michaelina, to Licentia Patent-Verwaltungs-GmbH. Fur security system. 4,460,092, Cl. 211-4.000.

Leeper, Harold M.: *See—*
Wong, Patrick S.; Langston, Jimmy B.; and Leeper, Harold M., 4,460,367, Cl. 604-890.000.

Legge, Paul F.: *See—*
Stratmann, Wilhelm; and Legge, Paul F., 4,460,614, Cl. 426-603.000.

Leggett, Wilbur P. Hydrotherapy jet unit. 4,460,519, Cl. 261-76.000.

Lehrach, Ronald P. C.: *See—*
Keilbach, Joseph R.; Lehrach, Ronald P. C.; and Kay, Ira W., 4,459,845, Cl. 73-113.000.

Leiber, Heinz; Roller, Dieter; and Braschel, Volker, to Robert Bosch GmbH. Vehicular anti-skid braking system. 4,460,963, Cl. 364-426.000.

Leichnitz, Kurt, to Dragerwerk AG. Test tube for the measurement of oil mists. 4,460,544, Cl. 422-59.000.

Leising, Walter F.: *See—*
Oszczakiewicz, Michael J.; Leising, Walter F.; and Wojciechowski, Matthew P., 4,460,904, Cl. 364-75.000.

Leistner, William E.; Minagawa, Motonobu; Kubota, Naohiro; Shibata, Toshihiro; and Arata, Ryozo. Polyethers containing 2,2,6,6-tetramethyl piperidinyl carboxylic acid ester groups and synthetic resin compositions. 4,460,725, Cl. 524-102.000.

Lemaire, Emmanuel; De Ro, Michel; and Cuylits, Jacques, to S.A. Constructions Ferroviaires et Metalliques. Radial truck. 4,459,919, Cl. 105-169.000.

Lemay, Richard A.; Stanley, Philip E.; Woods, William E.; and Cushing, David E., to Honeywell Information Systems Inc. Logic control system including cache memory for CPU-memory transfers. 4,460,959, Cl. 364-200.000.

Lender, Adam; and Olszanski, Henry H., to GTE Network Systems Incorporated. Method and apparatus for converting binary information into a high density single-sideband signal. 4,461,011, Cl. 375-18.000.

Leonard, Thomas M.: *See—*
Evans, Robert M.; and Leonard, Thomas M., 4,460,737, Cl. 524-584.000.

Le Page, Jean-Francois: *See—*
Deschamps, Andre; Cosyns, Jean; and Le Page, Jean-Francois, 4,460,553, Cl. 423-219.000.

Lepetit, Philippe: *See—*
Kaiser, Victor; Heck, Gerard; and Lepetit, Philippe, 4,460,396, Cl. 62-28.000.

Lepisto, J. George: *See—*
Hain, Paul O.; and Lepisto, J. George, 4,460,091, Cl. 206-621.000.

Lersmacher, Bernhard, to U.S. Philips Corporation. Rotary-anode X-ray tube. 4,461,019, Cl. 378-125.000.

Les Cables de Lyon: *See—*
Beucher, Michel, 4,459,799, Cl. 57-293.000.

Lese, Gregory; and Nash, Donald H., to AT&T Bell Laboratories. Frequency modulation transmitter for voice or data. 4,461,013, Cl. 375-65.000.

Le Tixerant, Eric. Bitless harnessing system. 4,459,795, Cl. 54-6.00A.

Lever Brothers Company: *See—*
Beavan, Stuart W., 4,460,373, Cl. 8-103.000.
Liem, Seeng D., 4,460,491, Cl. 252-135.000.
Rapisarda, Anthony A.; and Romeo, Joseph, 4,460,485, Cl. 252-8.750.
Stratmann, Wilhelm; and Legge, Paul F., 4,460,614, Cl. 426-603.000.

Levesque, Wilfred P.: *See—*
Kern, Robert H.; and Levesque, Wilfred P., 4,460,317, Cl. 417-49.000.

Levinson, Lionel M., to General Electric Company. Method of varistor capacitance reduction by boron diffusion. 4,460,623, Cl. 427-101.000.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Triazinyl ureas and isoureas. 4,460,404, Cl. 71-93.000.

Lewis, Frederick M., to Sterling Drug, Inc. Method and apparatus for efficiently controlling the incineration of combustible materials in a multiple hearth furnace system. 4,459,923, Cl. 110-346.000.

Lewis, Royce C., Jr. Antilordosis belt. 4,459,979, Cl. 128-78.000.

Leygraf, Christofer H.: *See—*
Somorjai, Gabor A.; and Leygraf, Christofer H., 4,460,443, Cl. 204-129.000.

Li, Chou H. Grinding and polishing apparatus. 4,459,781, Cl. 51-123.00R.

Li, Thomas M.: *See—*
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,460,772, Cl. 544-311.000.

Libit, Sidney M., to Owens-Illinois, Inc. Removable resistant container cap and neck assembly. 4,460,100, Cl. 215-237.000.

Licentia Patent-Verwaltungs-GmbH: *See—*
Lee, Michaelina, 4,460,092, Cl. 211-4.000.

Liegner, Kenneth B. Speaking tracheostomy tube. 4,459,984, Cl. 128-207.150.

Liem, Seeng D., to Lever Brothers Company. Process for preparing low silicate detergent compositions. 4,460,491, Cl. 252-135.000.

Lienhard, Paul: *See—*
Iqbal, Abul; Lienhard, Paul; and Pugin, Andre, 4,460,768, Cl. 548-105.000.

Lim, In C.: *See*—
Carter, Russell P., Jr.; Lim, In C.; and Reinert, Gerard E., 4,460,733, Cl. 524-493.000.
Lin, Gordon K.: *See*—
Canniff, Ronald J.; and Lin, Gordon K., 4,460,806, Cl. 179-18.0EB.
Lin, Jinn P. Multi-function cushion and its assemblies. 4,459,714, Cl. 5-455.000.
Linde Aktiengesellschaft: *See*—
Reimann, Hans, 4,460,470, Cl. 210-605.000.
Lindemann Maschinenfabrik GmbH: *See*—
Probst, Karl; Hufken, Kurt; and Goricanec, Zvonko, 4,459,904, Cl. 100-11.000.
Lindh, DeVere V.: *See*—
Elrod, Samuel D.; and Lindh, DeVere V., 4,460,657, Cl. 428-600.000.
Lindner, Christian; and Ott, Karl-Heinz, to Bayer Aktiengesellschaft. Rubber powders. 4,460,749, Cl. 525-310.000.
Lindsey, James C., to Cavalier Corporation. Plural mode multi-column dispensing machine. 4,460,107, Cl. 221-67.000.
Lindstroem, Poul: *See*—
Kristiansen, Bjarne; Christiansen, Tage; Jensen, Poul F.; Pedersen, Bent; Kjaer, Jens B.; Kristensen, Kjeld; Jensen, Svend O.; Lindstroem, Poul; and Kjaer, Bjarne, 4,460,609, Cl. 426-39.000.
Linecker, Josef. Cross-country ski shoe. 4,459,766, Cl. 36-117.000.
Lion Corporation: *See*—
Suzuki, Shinichi; Suzuki, Kunitomo; and Honda, Hiromitsu, 4,460,773, Cl. 544-350.000.
Lippel, Bernard, to Quanticon Inc. Dither quantized signalling for color television. 4,460,924, Cl. 358-310.000.
Lippert, Wolfgang: *See*—
Rugenstein, Rolf K. A.; Brahmst, Dieter; and Lippert, Wolfgang, 4,460,088, Cl. 206-494.000.
Lippuner, Werner; and Muller, Ulrich, to Wild Heerbrugg Aktiengesellschaft. Adjustable caliber rod. 4,459,757, Cl. 33-234.000.
List, Hans: *See*—
Kirchweger, Karl; Knopf, Franz; and Thien, Gerhard, 4,459,944, Cl. 123-41.660.
Lithium Corporation of America: *See*—
Morrison, Robert C., 4,460,515, Cl. 260-665.00R.
Littelfuse, Inc.: *See*—
McAlear, Jon; and Tait, Robert J., 4,460,887, Cl. 337-186.000.
Lloyd-Davies, William: *See*—
Scholle, William J.; and Lloyd-Davies, William, 4,460,025, Cl. 141-1.000.
Lobato, Andres: *See*—
Birch, Ernest H.; and Lobato, Andres, 4,460,242, Cl. 350-96.200.
Locheed, Edward W., Jr.: *See*—
Hazelrigg, Keith R.; and Locheed, Edward W., Jr., 4,460,156, Cl. 251-149.300.
Lohr & Bromkamp GmbH: *See*—
Welschof, Hans-Heinrich; and Beier, Rudolf, 4,460,058, Cl. 180-258.000.
Lomas, Arnold W., to Dow Corning Corporation. Process to control foaming in non-aqueous systems. 4,460,493, Cl. 252-321.000.
Long, David J.: *See*—
Oxenrider, Bryce C.; and Long, David J., 4,460,785, Cl. 560-83.000.
Long, George W. Anchor. 4,459,934, Cl. 114-304.000.
Longaretti, Carlo. Furnace grate. 4,460,333, Cl. 432-80.000.
Longoni, Angelo: *See*—
Bettarini, Franco; Massardo, Pietro; Piccardi, Paolo; and Longoni, Angelo, 4,460,606, Cl. 424-341.000.
Lott, John W.: *See*—
Haney, Douglas M.; and Lott, John W., 4,460,427, Cl. 156-303.000.
Lucas Industries Public Limited Company: *See*—
Adey, Anthony J.; Ritchie, Alistair J. F.; and Wigglesworth, Michael J., 4,459,955, Cl. 123-357.000.
Lund, Robert S., to Pettibone Corporation. Method and apparatus for blowing cores etc. using a plunger-cleaned blow box suitable for quick-set sand. 4,460,032, Cl. 164-195.000.
Lundberg, Duane R.; and Thomas, Joseph S., Jr., to AMF Inc. Vaulting boards. 4,460,170, Cl. 272-65.000.
Lundberg, Robert D.: *See*—
Peiffer, Dennis G.; Lundberg, Robert D.; Kowalik, Ralph M.; and Turner, S. Richard, 4,460,758, Cl. 526-287.000.
Lundgren, Bengt, to SKF Nova AB. Clamp coupling. 4,460,289, Cl. 403-314.000.
Lundquist, Gunnar: *See*—
Mases, Per E.; Lundquist, Gunnar; Nyqvist, Harry; and Carlsson, Torsten, 4,460,014, Cl. 137-614.180.
Lundstrom, Eric A., to United States of America, Navy. Output coupler for laser resonator. 4,461,009, Cl. 372-108.000.
Lung, Hans G.; and Persson, Lars B. I., to Aktiebolaget Electrolux. Heat pump. 4,459,816, Cl. 62-183.000.
Lunos Luftung GmbH & Co. Ventilatoren KG: *See*—
Tinz, Bernhard H., 4,460,946, Cl. 362-319.000.
Luperox GmbH: *See*—
Rauer, Kurt, 4,460,748, Cl. 525-256.000.
Lutz, David E.: *See*—
Lutz, David W.; and Lutz, David E., 4,460,064, Cl. 187-9.00R.
Lutz, David W.; and Lutz, David E. Forklift truck capable of raising and lowering itself and a load back and forth between two surfaces at different levels. 4,460,064, Cl. 187-9.00R.
Lyerly, Jack N., to Westinghouse Electric Corp. Fixture for removing a turbine disc without removing blades therefrom. 4,460,209, Cl. 294-67.0BC.
Lymperis, William. Cropping device. 4,460,271, Cl. 355-74.000.
Lynch, James F.: *See*—
Stokes, Robert H.; and Lynch, James F., 4,460,987, Cl. 367-103.000.
Lynch, Robert A., to General Dynamics Corporation/Convair Div. Combined rocket motor warhead. 4,459,915, Cl. 102-374.000.
M.B.A. Therapeutic Language Systems Inc.: *See*—
Mills, Michael, 4,460,342, Cl. 434-185.000.
Maa, Jer-shen, to RCA Corporation. Patterning of submicrometer metal silicide structures. 4,460,435, Cl. 156-643.000.
Maass, Donald A.: *See*—
Keskkula, Henno; Maass, Donald A.; and McCreedy, Kathleen M., 4,460,744, Cl. 525-71.000.
Macbain, Kathleen R. Mounting brackets for shelves and panels. 4,460,147, Cl. 248-542.000.
Macfie, George B., Jr., to A. Duda & Sons, Inc. Coated fruit juice impregnated plantains. 4,460,610, Cl. 426-102.000.
MacGregor, James: *See*—
Nanci, James R.; and MacGregor, James, 4,460,009, Cl. 137-243.600.
Machol, Guenther K.: *See*—
Homan, Merle E.; Machol, Guenther K.; and Warren, Larry M., 4,460,972, Cl. 364-900.000.
Machonis, John, Jr.: *See*—
Adur, Ashok M.; Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,460,632, Cl. 428-35.000.
Adur, Ashok M.; Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,460,745, Cl. 525-74.000.
Madey, John M. J. Excitation cancelling free electron laser. 4,461,004, Cl. 372-2.000.
Maeda, Tetsuo: *See*—
Matsubara, Tetsuyuki; Ito, Norifumi; Ishida, Yuzuru; Iwamoto, Mune; and Maeda, Tetsuo, 4,460,278, Cl. 366-149.000.
Magendans, Frederik: *See*—
Hubner, Horst; Magendans, Frederik; and Van Rheenen, Bernhard J. P., 4,461,020, Cl. 378-143.000.
Maggioni Farmaceutici, S.p.A.: *See*—
Picciola, Giampaolo; Ravenna, Franco; and Riva, Mario, 4,460,601, Cl. 424-300.000.
Maijer, Rolf: *See*—
Smith, Dennis C.; and Maijer, Rolf, 4,460,336, Cl. 433-9.000.
Makajima, Yasuo; Hayashi, Yoshimasa; and Yoshimura, Tooru, to Nissan Motor Company, Limited. Multiple spark ignition internal combustion engine with exhaust gas recirculation. 4,459,804, Cl. 60-274.000.
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; and Shimazaki, Hiroshi, to UBE Industries, Ltd. Process for producing aromatic polyimide hollow filaments. 4,460,526, Cl. 264-41.000.
Malamud, Herbert; and Glasser, Herman, to Victoreen, Inc. Radiation shielded wheel patient transport. 4,460,833, Cl. 250-519.100.
Mallet, Bernard, to Nadella. Assembly comprising a coupling element having a reinforced hub. 4,460,290, Cl. 403-373.000.
Malola, Hane M., to National Service Industries. Universal luminaire mount. 4,460,948, Cl. 362-396.000.
Malone, James M.: *See*—
Leal, Joseph M.; and Malone, James M., 4,459,709, Cl. 3-2.000.
Malone, Paul E.: *See*—
Thomas, Daniel A.; Malone, Paul E.; and Goth, Gary F., 4,460,893, Cl. 340-682.000.
Maloof, John J. Cart with seat and storage compartment. 4,460,188, Cl. 280-30.000.
Mamiya Koki Kabushiki Kaisha: *See*—
Eguchi, Mitsuo; Kikuchi, Yoshimi; and Ichino, Nobuyuki, 4,460,261, Cl. 354-408.000.
Mann, Egon; and Eymuller, Helmut, to Zahnradfabrik Friedrichshafen, AG. Travelling drive for road rollers, more particularly with vibratory system. 4,459,875, Cl. 74-785.000.
Manning, David R.: *See*—
Rengger, Ralph E.; and Manning, David R., 4,461,024, Cl. 381-46.000.
Mano, Tsuneo: *See*—
Yamada, Junzo; Mano, Tsuneo; and Inoue, Junichi, 4,460,998, Cl. 371-10.000.
Manville Service Corporation: *See*—
Charron, William, 4,460,349, Cl. 493-163.000.
Marchal, Francis V., to Skinner Engine Company. High pressure ball valve. 4,460,157, Cl. 251-315.000.
Marchal, Paul: *See*—
Moreau, Claude; Francois, Daniel; Vertut, Jean; Marchal, Paul; and Streiff, Gerard, 4,460,302, Cl. 414-5.000.
Maremont Corporation: *See*—
Smeltzer, Paul, 4,460,073, Cl. 188-322.130.
Marenko Oy: *See*—
Plyhm, Into, 4,460,171, Cl. 272-94.000.
Margotte, Dieter: *See*—
Neuray, Dieter; Margotte, Dieter; Tresper, Erhard; and Jacobs, Gunter, 4,460,752, Cl. 525-462.000.
Mariaux, Jacques; and Rossman, Rudolf, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Method for attaching a ballistic hood at a projectile body. 4,459,725, Cl. 29-1.200.
Marjollet, Jacques: *See*—
Andro, Jean; and Marjollet, Jacques, 4,460,539, Cl. 376-285.000.
Market Forge, Div. of Beatrice Foods Co.: *See*—
Alden, Lorne B.; and Richardson, Theodore A., 4,460,822, Cl. 219-401.000.
Markwell, Roger E., to Beecham Group p.l.c. Bicyclo-hetero-alkylene-1-piperidines, pharmaceutical compositions thereof and methods of use thereof. 4,460,594, Cl. 424-267.000.

Marlen Manufacturing and Development Co.: *See*—
Fenton, Leonard, 4,460,359, Cl. 604-277.000.
Mars, Inc.: *See*—
Barnes, Elwood E.; and Flack, Thomas L., 4,460,003, Cl. 133-1.00R.
Marsh, Lawrence B., to Marsh-McBirney, Inc. Flow meter having an electromagnetic sensor probe. 4,459,858, Cl. 73-861.120.
Marsh-McBirney, Inc.: *See*—
Marsh, Lawrence B., 4,459,858, Cl. 73-861.120.
Marshall, Charles, to United States of America, Air Force. Variable inlet vane assembly for a gas turbine combustion. 4,459,803, Cl. 60-39.230.
Martinez, Mario J.: *See*—
Hildebrand, Donald L.; and Martinez, Mario J., 4,460,186, Cl. 280-92.000.
Martinot, Bernard: *See*—
Jouffroy, Guy; and Martinot, Bernard, 4,460,545, Cl. 422-131.000.
Marvin Glass & Associates: *See*—
Jaworski, Eugene; Breslow, Jeffrey D.; Sakoda, Tom K.; and Disko, Harry, 4,459,776, Cl. 446-462.000.
Marvin M. Stark Research Corporation: *See*—
Stark, Marvin M.; Soelberg, Kenneth B.; and Pelzner, Roger B., 4,460,340, Cl. 433-91.000.
Mascher, Werner; Zloczysti, Stefan; Woicke, Bernd; and Haertle, Klaus, to Auergesellschaft GmbH. Breathing bag for closed cycle respirator. 4,459,981, Cl. 128-202.260.
Maschinenfabrik Andritz Aktiengesellschaft: *See*—
Perchthaler, Heinz; Syrowatka, Rupert; and Dietl, Werner, 4,460,461, Cl. 210-104.000.
Masco Corporation of Indiana: *See*—
Williamson, Warren L.; Fathauer, George H.; and Mathis, Cecil E., 4,461,036, Cl. 455-165.000.
Mases, Per E.; Lundquist, Gunnar; Nyqvist, Harry; and Carlsson, Torsten, to Alfa-Laval AB. Non-mixing valve. 4,460,014, Cl. 137-614.180.
Mashimo, Yukio; Iwashita, Tomonori; Ichiyanagi, Toshikazu; Fukahori, Hidehiko; Fujino, Masahisa; and Sunouchi, Akio, to Canon Kabushiki Kaisha. Camera system with camera mounted drive. 4,460,265, Cl. 354-448.000.
Maskalick, Nicholas J., to Westinghouse Electric Corp. Hydriodic acid-anode-depolarized hydrogen generator. 4,460,444, Cl. 204-129.000.
Massardo, Pietro: *See*—
Bettarini, Franco; Massardo, Pietro; Piccardi, Paolo; and Longoni, Angelo, 4,460,606, Cl. 424-341.000.
Masunaga, Makoto: *See*—
Kawai, Tohru; and Masunaga, Makoto, 4,460,253, Cl. 354-446.000.
Tsunekawa, Tokuichi; Hosoe, Kazuya; and Masunaga, Makoto, 4,460,836, Cl. 307-311.000.
Masuoka, Fujio, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor integrated circuit device with low power consumption in a standby mode using an on-chip substrate bias generator. 4,460,835, Cl. 307-296.00R.
Mathis, Cecil E.: *See*—
Williamson, Warren L.; Fathauer, George H.; and Mathis, Cecil E., 4,461,036, Cl. 455-165.000.
Matsubara, Tetsuyuki; Ito, Norifumi; Ishida, Yuzuru; Iwamoto, Mune; and Maeda, Tetsuo, to Toyo Engineering Corporation; and Mitsui Toatsu Chemicals, Incorporated. Continuous bulk polymerization reactor. 4,460,278, Cl. 366-149.000.
Matsuda, Hideaki: *See*—
Okamoto, Takanori; Onishi, Takaharu; and Matsuda, Hideaki, 4,460,760, Cl. 526-301.000.
Matsuda, Kenji: *See*—
Sato, Akihiro; Tachibana, Masami; Uwai, Toshihiro; Matsuda, Kenji; and Higuchi, Yoshiharu, 4,460,757, Cl. 526-114.000.
Matsukawa, Hiroharu: *See*—
Hosoi, Noriyuki; Matsukawa, Hiroharu; and Ogata, Yasuhiro, 4,460,199, Cl. 346-207.000.
Nakamura, Sukenori; Igarashi, Akira; and Matsukawa, Hiroharu, 4,460,626, Cl. 427-150.000.
Matsumoto, Kazuo; and Takashima, Kohki, to Tanabe Seiyaku Co., Ltd. Thienyloxazolylacetic acid derivatives and process for preparing. 4,460,596, Cl. 424-272.000.
Matsumoto, Michito; Kakii, Toshiaki; and Toda, Yuichi, to Nippon Telegraph & Telephone Public Corporation; and Sumitomo Electric Industries, Ltd. Apparatus for heating heat-shrinkable tubes. 4,460,820, Cl. 219-385.000.
Matsumoto, Shunichi: *See*—
Fujiyama, Susumu; and Matsumoto, Shunichi, 4,460,794, Cl. 568-428.000.
Matsumura, Koichi; and Aono, Tetsuya, to Takeda Chemical Industries, Ltd. Process for production of sugar ketals. 4,460,767, Cl. 536-124.000.
Matsuoka, Hideoki: *See*—
Tsuda, Hiroshi; and Matsuoka, Hideoki, 4,460,217, Cl. 297-361.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Hosokawa, Takehiko, 4,459,961, Cl. 123-491.000.
Nishino, Atsushi; Sonetaka, Kazunori; Kimura, Kunio; and Watanabe, Yoshihiro, 4,460,630, Cl. 427-376.200.
Ogata, Nobutaka, 4,459,771, Cl. 38-77.800.
Sakamoto, Yoichi, 4,461,035, Cl. 455-164.000.
Tanabe, Kenzo; and Suzuki, Junji, 4,461,042, Cl. 455-333.000.
Yamada, Toshiaki, 4,460,076, Cl. 192-35.000.
Matsuura, Akira: *See*—
Watai, Yuji; Kitamura, Toshiyuki; Hirayama, Yoshiyuki; Matsuura, Akira; and Yasui, Hirokazu, 4,460,270, Cl. 355-14.00E.
Matthews, Russell H., to Thomas & Betts Corporation. Flat cable connector having cover-cable retention. 4,460,229, Cl. 339-99.00R.
Mattisson, Sven, to Inventab Audio Kb. Low noise differential amplifier. 4,460,872, Cl. 330-252.000.
Matz, Gary F.: *See*—
Costello, Christine A.; and Matz, Gary F., 4,460,477, Cl. 210-701.000.
Mauser-Werke Oberndorf GmbH: *See*—
Gruhler, Siegfried, 4,459,755, Cl. 33-169.00R.
Max Baermann GmbH: *See*—
Heinrich, Alfred A.; and Oerter, Karl E., 4,460,882, Cl. 335-225.000.
Mazzanti, Vincent E. Recoil reducing device for firearms. 4,459,895, Cl. 89-14.00C.
McAlear, Jon; and Tait, Robert J., to Littelfuse, Inc. Electrical fuse. 4,460,887, Cl. 337-186.000.
McCaffrey, David J. A.; and Jones, William D., to Coal Industry (Patents) Limited. Treatment of organics containing water. 4,460,476, Cl. 210-689.000.
McClary, Elmer R., to Data General Corporation. Digital data processing system using unique techniques for handling the leading digits and the signs of operands in arithmetic operations. 4,460,970, Cl. 364-761.000.
McCormick, John: *See*—
Conners, Ron; and McCormick, John, 4,459,995, Cl. 128-734.000.
McCormick, Leach S.: *See*—
Hansen, Irvin L.; McCormick, Leach S.; and Moore, Harold R., 4,460,885, Cl. 336-180.000.
McCreedy, Kathleen M.: *See*—
Keskkula, Henno; Maass, Donald A.; and McCreedy, Kathleen M., 4,460,744, Cl. 525-71.000.
McDaniel, Max P.; Sanbrano, John A.; and Johnson, Marvin M., to Phillips Petroleum Company. Olefin polymerization method. 4,460,756, Cl. 526-106.000.
McGeer, James P., to Alcan International Limited. Electrolytic production of aluminum and cell therefor. 4,460,440, Cl. 204-67.000.
McGhie, James R.; and Fishgal, Semyon I., to American Hoist of Canada Limited. Towed vehicle with means for connection to fifth wheel of a towing vehicle. 4,460,194, Cl. 280-443.000.
McGhie, Terence V.: *See*—
Gratton, Arthur D.; McGhie, Terence V.; Whelan, Robert C.; and Peeters, Josephus B., 4,460,888, Cl. 337-290.000.
McGraw-Edison: *See*—
Kelly, James P., 4,460,947, Cl. 362-374.000.
McGugan, John D., to Hunting Oilfield Services (UK) Limited. Pipe connectors. 4,460,201, Cl. 285-18.000.
McKay, William F.; and Van Syckle, Peter B., to Howmedica Inc. Tibial prosthesis extractor and method for extracting a tibial implant. 4,459,985, Cl. 128-303.00R.
McKee, William H.; and Steinbach, Thomas M., to TRW Inc. Connector hood constructions. 4,460,230, Cl. 339-106.000.
McMillan, Moses W.: *See*—
Kaplan, Lester J.; McMillan, Moses W.; and Szmuszkovicz, Jacob, 4,460,600, Cl. 424-274.000.
McMullen, Alice K.: *See*—
Anderson, Robert W.; Gee, May L.; and McMullen, Alice K., 4,460,960, Cl. 364-200.000.
McNeely, Michael L., to RCA Corporation. Video disc preform and method of making a disc therefrom. 4,460,656, Cl. 428-542.800.
McSherry, Charles K.: *See*—
Mosbach, Erwin H.; Ayengar, Narayan K. N.; and McSherry, Charles K., 4,460,509, Cl. 260-239.500.
McVicar, Walter D.: *See*—
DeMarco, Richard E.; Hopkins, David; and McVicar, Walter D., 4,460,087, Cl. 206-415.000.
Medtronic, Inc.: *See*—
Jurva, Edsel O.; and Goodin, Richard L., 4,460,664, Cl. 429-181.000.
Mehl, Siegfried: *See*—
Post, Sieghard; and Mehl, Siegfried, 4,460,884, Cl. 336-73.000.
Mehta, Rustam: *See*—
Gee, Lubin; Cheng, Pearl; Bobra, Yogendra; and Mehta, Rustam, 4,460,982, Cl. 365-189.000.
Meiji Seika Kaisha Ltd.: *See*—
Toyama, Hiromi; Nojiri, Chuhei; Shomura, Takashi; and Yamada, Yujiro, 4,460,693, Cl. 435-317.000.
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Meissner, Dietrich; and Geisenhof, Heinz, to Schering Aktiengesellschaft. Tray drying chamber. 4,459,763, Cl. 34-75.000.
Meister, Jack B.; Beard, Stephen P.; and Andrews, Robert H. Quiet relay. 4,460,881, Cl. 335-128.000.
Mendenhall, G. David, to Michigan Technological University, Board of Control of. Method for preparing organic hyponitrites. 4,460,513, Cl. 260-466.000.

Mendoza, Joe: *See*—
Gordbegli, Manochehr; and Mendoza, Joe, 4,460,944, Cl. 362-276.000.
Mentrup, Anton: *See*—
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, 4,460,581, Cl. 424-244.000.
Mercer, Roger W.; and Hay, Louis E. Plasterless dental articulator and method for mounting casts. 4,460,338, Cl. 433-60.000.
Merck & Co., Inc.: *See*—
Foor, Forrest; and Morin, Nancy R., 4,460,689, Cl. 435-172.000.
Shih, David H., 4,460,507, Cl. 260-245.20T.
Merle, Jacques G.: *See*—
Migliarese-Caputi, Jean-Louis; Baylot, Michel P.; and Merle, Jacques G., 4,460,295, Cl. 405-303.000.
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermes, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari nee Debreczy, Lelle; and David, Agoston, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Antiphlogistic and anticoagulant condensed pyrimidine derivatives. 4,460,771, Cl. 544-282.000.
Metal Box Can, Inc.: *See*—
Taube, William L., 4,459,910, Cl. 101-18.000.
Metalltechnik Schmidt GmbH & Co.: *See*—
Schmidt, Peter; and Kulka, Siegfried, 4,460,899, Cl. 343-841.000.
Methode Electronics, Inc.: *See*—
Brown, Vincent B.; and Schlacks, Robert F., 4,460,223, Cl. 339-14.00R.
Brown, Vincent B.; and Schlacks, Robert F., 4,460,237, Cl. 339-176.0MP.
Meyer, James W.: *See*—
Greivenkamp, John E., Jr.; Lambeth, David N.; and Meyer, James W., 4,460,259, Cl. 354-403.000.
Meyer, Yves; and Carre, Jean-Jacques, to Societe Anonyme DBA. Spot-type brake. 4,460,070, Cl. 188-73.100.
Meyle, Werner: *See*—
Dolata, Hans; Meyle, Werner; Kelbert, Adam; and Nitschmann, Karl, 4,459,890, Cl. 83-834.000.
Michael, Ewald, to Siemens Aktiengesellschaft. Integrated dynamic read-write memory. 4,460,983, Cl. 365-189.000.
Michael, John E.; and Flatt, Larry D., to Carrier Corporation. Method and apparatus for producing even tube extensions in a partially assembled heat exchanger. 4,459,917, Cl. 165-151.000.
Michael, Vesta F., to Fiber Glass Systems Inc. Filament windings method and apparatus employing a trowel. 4,460,422, Cl. 156-175.000.
Michaelis, Theodore D., to RCA Corporation. Encoder controlled apparatus for dynamic braking. 4,460,857, Cl. 318-375.000.
Michigan Technological University, Board of Control of: *See*—
Mendenhall, G. David, 4,460,513, Cl. 260-466.000.
Miechur, Joseph W. Lifting device. 4,460,210, Cl. 294-97.000.
Migliarese-Caputi, Jean-Louis; Baylot, Michel P.; and Merle, Jacques G., to Compagnie Francaise des Petroles. Submersible connector. 4,460,295, Cl. 405-303.000.
Miki, Nobuaki; and Yokoyama, Shoji. Torque ratio control device for a V-belt type continuously variable transmission for vehicles. 4,459,879, Cl. 74-867.000.
Miles Laboratories, Inc.: *See*—
Bauer, Robert, 4,460,684, Cl. 435-14.000.
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,460,772, Cl. 544-311.000.
Milford, George N., Jr., to Du Pont de Nemours, E. I., and Company. Preparation of small particle polybenzimidazole. 4,460,763, Cl. 528-336.000.
Millauer, Hans; and Schwertfeger, Werner, to Hoechst Aktiengesellschaft. ω-Fluorosulfato-perfluorocarboxylic acid derivatives and processes for their preparation. 4,460,512, Cl. 260-458.00F.
Miller, David A., to LeBron, Inc. Fishing lure light. 4,460,941, Cl. 362-158.000.
Miller, James A., to Ingersoll-Rand Company. Drill pipe loader. 4,460,303, Cl. 414-22.000.
Miller, Jeffrey T.: *See*—
Hensley, Albert L., Jr.; Miller, Jeffrey T.; Nevitt, Thomas D.; and Tait, A. Martin, 4,460,698, Cl. 502-66.000.
Miller, John L., to Owens-Illinois, Inc. Plural container package. 4,460,084, Cl. 206-158.000.
Millhone, Ralph S.: *See*—
Elson, Thomas D.; and Millhone, Ralph S., 4,460,045, Cl. 166-278.000.
Milliken Research Corporation: *See*—
Rekers, John W., 4,460,445, Cl. 204-159.200.
Milliouet, Jean; and Staron, Philippe, to Societe Nationale Elf Aquitaine (Production). Method of seismic exploration using acoustic diagraphy. 4,460,986, Cl. 367-27.000.
Mills, John R.: *See*—
Ritchie, Duncan; Mills, John R.; and Couper, William R. D., 4,460,166, Cl. 266-228.000.
Mills, Michael, to M.B.A. Therapeutic Language Systems Inc. Aid for speech therapy and a method of making same. 4,460,342, Cl. 434-185.000.
Milo, August, to Universal Valve Co., Inc. Pressure-vacuum vent. 4,460,013, Cl. 137-493.400.
Minagawa, Motonobu: *See*—
Leistner, William E.; Minagawa, Motonobu; Kubota, Naohiro; Shibata, Toshihiro; and Arata, Ryozo, 4,460,725, Cl. 524-102.000.
Minami, Shinichi: *See*—
Hagiwara, Takaaki; Itoh, Yokichi; Kondo, Ryuji; Yatsuda, Yuji; and Minami, Shinichi, 4,460,980, Cl. 365-184.000.
Minister of National Defense of Her Majesty's Canadian Government: *See*—
Vincent, Denis M., 4,460,249, Cl. 350-356.000.
Ministry of International Trade & Industry: *See*—
Shimada, Junichi; Mitsuhashi, Yoshinobu; Kikuchi, Keisuke; and Sakurai, Kenjiro, 4,460,977, Cl. 365-106.000.
Minnesota Mining & Manufacturing Company: *See*—
Borro, Giuliano, 4,460,779, Cl. 548-217.000.
Errede, Louis A.; Stoesz, James D.; and Upton, Jenny, 4,460,642, Cl. 428-283.000.
Frenchik, Robert A., 4,460,681, Cl. 430-502.000.
Nelson, Kerry S., 4,460,907, Cl. 346-153.100.
Robins, Janis, 4,460,759, Cl. 526-298.000.
Smith, George H.; and Olofson, Peter M., 4,460,677, Cl. 430-336.000.
Minolta Camera Kabushiki Kaisha: *See*—
Yoshida, Masazumi; Noda, Tadao; and Inoue, Masayoshi, 4,460,668, Cl. 430-31.000.
Mitani, Masao: *See*—
Abe, Katsuo; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; Mitani, Masao; Fujimoto, Kazuyuki; and Hiratsuka, Shigetoshi, 4,460,494, Cl. 252-512.000.
Mitchell, Annette: *See*—
Saleeb, Fouad Z.; and Mitchell, Annette, 4,460,612, Cl. 426-477.000.
Mitchell, Thomas A.: *See*—
Henry, James W.; and Mitchell, Thomas A., 4,460,921, Cl. 358-107.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Fujino, Tadashi, 4,461,014, Cl. 375-83.000.
Hamasaki, Yoshihiro, 4,460,956, Cl. 363-141.000.
Ohniwa, Kohichi, 4,459,926, Cl. 112-121.120.
Ohta, Kazutoshi, 4,460,066, Cl. 187-29.00R.
Yamagami, Kozo, 4,459,855, Cl. 73-727.000.
Yokoyama, Seishi, 4,459,815, Cl. 62-180.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Fujiyama, Susumu; and Matsumoto, Shunichi, 4,460,794, Cl. 568-428.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Hirakawa, Tadashi; and Sato, Hiroshi, 4,460,135, Cl. 242-68.400.
Mitsubishi Oil Co., Ltd.: *See*—
Iijima, Hiroshi; Moriya, Kunihiko; Tate, Kazuhito; Muroga, Goro; Yanagida, Kazuhiro; Nakamura, Yoshikazu; Inoue, Akiyoshi; and Higashi, Masahiro, 4,460,454, Cl. 208-40.000.
Moriya, Kunihiko; Tate, Kazuhito; Muroga, Goro; and Yanagida, Kazuhiro, 4,460,455, Cl. 208-40.000.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Abe, Katsuhiro; Yamauchi, Shin-ichi; and Ohkubo, Akira, 4,460,743, Cl. 525-68.000.
Imanari, Makoto; and Takiguchi, Makoto, 4,460,706, Cl. 502-304.000.
Mitsubishi Rayon Company, Limited: *See*—
Kishida, Kazuo; Hasegawa, Akira; and Sugimori, Masahiro, 4,460,742, Cl. 525-64.000.
Mitsubushi Paper Mills, Ltd.: *See*—
Miyamoto, Shigehiko; and Watanabe, Yoshinobu, 4,460,637, Cl. 428-212.000.
Mitsugi, Noboru: *See*—
Kitoh, Makoto; Tajima, Tetsuo; Terunuma, Noboru; Mitsugi, Noboru; and Kageyama, Akira, 4,460,535, Cl. 264-262.000.
Mitsuhashi, Yoshinobu: *See*—
Shimada, Junichi; Mitsuhashi, Yoshinobu; Kikuchi, Keisuke; and Sakurai, Kenjiro, 4,460,977, Cl. 365-106.000.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Matsubara, Tetsuyuki; Ito, Norifumi; Ishida, Yuzuru; Iwamoto, Mune; and Maeda, Tetsuo, 4,460,278, Cl. 366-149.000.
Mittal, Faquir C.; and Curley, Joseph M., to Sperry Corporation. Continuous printed paper stacking device. 4,460,350, Cl. 493-412.000.
Miura, Takamaro: *See*—
Takematsu, Tetsuo; Segawa, Hirozo; Miura, Takamaro; Ataka, Toshiei; Chatani, Michio; and Nakamura, Akira, 4,460,403, Cl. 71-93.000.
Miwa, Hirohide; Hayashi, Hajime; and Shimura, Takaki, to Fujitsu Limited. Ultrasonic measuring system. 4,459,853, Cl. 73-626.000.
Miyachi, Nobuji; and Miyake, Ken'iti, to Miyachi Sewing Machine Co., Ltd. Cycle sewing machine. 4,459,925, Cl. 112-70.000.
Miyachi Sewing Machine Co., Ltd.: *See*—
Miyachi, Nobuji; and Miyake, Ken'iti, 4,459,925, Cl. 112-70.000.
Miyake, Ken'iti: *See*—
Miyachi, Nobuji; and Miyake, Ken'iti, 4,459,925, Cl. 112-70.000.
Miyamoto, Shigehiko; and Watanabe, Yoshinobu, to Mitsubushi Paper Mills, Ltd. Ink jet recording sheet. 4,460,637, Cl. 428-212.000.
Miyashita, Kiyoshi: *See*—
Yamazaki, Masaru; Miyashita, Kiyoshi; Kawazu, Hideyuki; and Ishimoto, Osamu, 4,460,269, Cl. 355-14.0SH.
Miyoshi, Katsuyoshi: *See*—
Terano, Minoru; Kimura, Koubei; Murai, Atsushi; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,460,701, Cl. 502-104.000.
Miyoshi, Teijiro. Television tuner circuit. 4,461,038, Cl. 455-176.000.
Mizokami, Kazunori, to Olympus Optical Co. Ltd. Automatic exposure control circuit for TTL automatic electronic flash. 4,460,262, Cl. 354-414.000.
Mizote, Masanori; and Uekusa, Yasuyuki, to Nissan Motor Company, Limited. Air-conditioning method and system for an automotive vehicle with nonvolatile memory feature. 4,460,035, Cl. 165-12.000.

Mizukura, Noboru; Ikeuchi, Satoru; Suginaka, Shunji; and Fujita, Noriko, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic element. 4,460,682, Cl. 430-559.000.
Mizumoto, Katsuji, to Pioneer Electronic Corporation. Two-phase brushless motor driving circuit. 4,460,856, Cl. 318-254.000.
Mizushima, Yoshihiko: *See*—
Murase, Katsumi; Tamama, Teruo; Amemiya, Yoshihito; and Mizushima, Yoshihiko, 4,460,417, Cl. 148-187.000.
Mizutani, Shunsuke: *See*—
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Mizutani, Shunsuke; and Sakakibara, Yozo, 4,460,518, Cl. 261-39.00A.
Mobay Chemical Corporation: *See*—
Carter, Russell P., Jr.; Lim, In C.; and Reinert, Gerard E., 4,460,733, Cl. 524-493.000.
Moberg, Sigurd M.; and Swift, Allan W., to E. J. Brooks Company. Seal of the padlock type. 4,460,203, Cl. 292-318.000.
Mobil Oil Corporation: *See*—
Cariello, Frank; and Kremer, Ross A., 4,460,460, Cl. 209-166.000.
Farcasiu, Malvina, 4,460,458, Cl. 208-252.000.
Moffatt, Gregory C. Animal handling device. 4,459,941, Cl. 119-103.000.
Mohn, Erich W.: *See*—
Perser, Donald A.; and Mohn, Erich W., 4,459,980, Cl. 128-80.00E.
Mohr, Paul H.; and Zientek, Eugene A., to Union Carbide Corporation. Orthosilicate ester containing heat transfer fluids. 4,460,478, Cl. 252-75.000.
Mohri, Eiichi: *See*—
Hayashi, Hiromasa; and Mohri, Eiichi, 4,459,837, Cl. 72-255.000.
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, to Suzuki Motor Company Limited. Cylinder-number-controlled engine. 4,459,953, Cl. 123-198.00F.
Moldovanyi, Laszlo: *See*—
Strasilla, Dieter; Meindl, Hubert; Moldovanyi, Laszlo; and Fearnley, Charles, 4,460,567, Cl. 424-70.000.
Strasilla, Dieter; Meindl, Hubert; Moldovanyi, Laszlo; and Fearnley, Charles, 4,460,568, Cl. 424-70.000.
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Strasilla, Dieter; Meindl, Hubert; Moldovanyi, Laszlo; and Fearnley, Charles, 4,460,570, Cl. 424-70.000.
Molins Limited: *See*—
Labbe, Francis A. M.; and Nowers, John R., 4,459,998, Cl. 131-62.000.
Moller, Hinrich, to Henkel Kommanditgesellschaft auf Aktien. Diglycidyl substituted heterocyclic compounds. 4,460,590, Cl. 424-251.000.
Monahan, Jack J.: *See*—
Booth, Raymond H.; Monahan, Jack J.; and Schneider, Fred J., 4,460,421, Cl. 156-64.000.
Monarch Knitting Machinery Corporation: *See*—
Tsuchiya, Koji; and Pernick, David, 4,459,830, Cl. 66-140.00S.
Monsanto Company: *See*—
Coleman, James P.; and Hallcher, Richard C., 4,460,787, Cl. 562-599.000.
Dufour, Daniel L.; and Holtrop, James S., 4,460,741, Cl. 525-64.000.
Morita, Eiichi, 4,460,769, Cl. 544-197.000.
Valange, Baudouin M., 4,460,406, Cl. 71-100.000.
Montalbano, Anthony J., to Amerace Corporation. Apparatus for making a tool. 4,460,449, Cl. 204-281.000.
Montedison S.p.A.: *See*—
Bettarini, Franco; Massardo, Pietro; Piccardi, Paolo; and Longoni, Angelo, 4,460,606, Cl. 424-341.000.
Montferme, Daniel, to E. P. REMY et Cie. Pincers-type gripper for seizing objects and gripping head equipped with such grippers. 4,460,212, Cl. 294-115.000.
Moon, Jack L.; and Tompkins, John C., to Kerr-McGee Coal Corporation. Method for loading coal into railroad cars. 4,460,308, Cl. 414-786.000.
Moore, Dennis F.: *See*—
Turner, Thomas F.; and Moore, Dennis F., 4,460,218, Cl. 299-1.000.
Moore, Harold R.: *See*—
Hansen, Irvin L.; McCormick, Leach S.; and Moore, Harold R., 4,460,885, Cl. 336-180.000.
Moore, John O.; and Griffin, Frank O., to Sprayrite Manufacturing Company. Recirculating rope weeder. 4,459,777, Cl. 47-1.500.
Moore, M. Samuel; and Harootion, Aramais, to Semco Instruments, Inc. Thermocouple wiring harness and connector system. 4,460,225, Cl. 339-28.000.
Moore, Walter T., to Veda Incorporated. Heliostat assembly. 4,459,972, Cl. 126-424.000.
Moreau, Claude; Francois, Daniel; Vertut, Jean; Marchal, Paul; and Streiff, Gerard, to Commissariat a l'Energie Atomique. Handling equipment comprising a telescopic supporting assembly carrying a motorized orientation support for at least one articulated slave arm. 4,460,302, Cl. 414-5.000.
Morel, Didier, to Rhone-Poulenc Industries. Process for the selective addition of a compound having an activated carbon atom onto a substituted conjugated diene. 4,460,786, Cl. 560-126.000.
Morel, Didier, to Rhone-Poulenc Industries. Unsaturated fatty alcohols and method of preparing them. 4,460,801, Cl. 568-840.000.
Morgan, H. William, to Filter Specialists, Inc. Liquid filter with combined filtration bag and lid sealing gasket. 4,460,468, Cl. 210-445.000.
Morgan, William D.: *See*—
Zacharkow, Stanley W.; and Morgan, William D., 4,460,465, Cl. 210-266.000.
Mori, Kei. Apparatus for uniform illumination employing light diffuser. 4,460,940, Cl. 362-32.000.
Mori, Walter; and Wernli, Hans, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Machine tool containing a machine stand for a work spindle, a tool magazine and a tool changer arranged thereat. 4,459,737, Cl. 29-568.000.
Morin, Nancy R.: *See*—
Foor, Forrest; and Morin, Nancy R., 4,460,689, Cl. 435-172.000.
Morita, Eiichi, to Monsanto Company. Thio-amino-1,3,5-triazines. 4,460,769, Cl. 544-197.000.
Morita, Nobuo, to Seiko Seiki Kabushiki Kaisha. Positioning apparatus for index table in center column type rotary index machine. 4,459,877, Cl. 74-813.00L.
Morita, Toyoo: *See*—
Yoshieda, Keiichi; and Morita, Toyoo, 4,459,884, Cl. 83-42.000.
Moriya, Kunihiko; Tate, Kazuhito; Muroga, Goro; and Yanagida, Kazuhiro, to Mitsubishi Oil Co., Ltd. Process for producing pitch for using as raw material for carbon fibers. 4,460,455, Cl. 208-40.000.
Moriya, Kunihiko: *See*—
Iijima, Hiroshi; Moriya, Kunihiko; Tate, Kazuhito; Muroga, Goro; Yanagida, Kazuhiro; Nakamura, Yoshikazu; Inoue, Akiyoshi; and Higashi, Masahiro, 4,460,454, Cl. 208-40.000.
Morner, Bengt O. J. S.; and Thomsen, Peter, to Sachs Dolmar GmbH & Co., Firma. Braking mechanism for braking the chain of a portable power chain saw. 4,460,072, Cl. 188-77.00R.
Moro, Luigi; Neri, Guido; and Rigamonti, Alessandro, to Farmitalia Carlo Erba S.p.A. Pharmaceutical compositions consisting or consisting essentially of liposomes, and processes for making same. 4,460,577, Cl. 424-180.000.
Morris, Robert V.: *See*—
O'Leary, Richard P.; and Morris, Robert V., 4,460,008, Cl. 137-93.000.
Morrison, Robert C., to Lithium Corporation of America. Hydrocarbon solvent solutions of complexes of sec-butyllithium and ethyllithium. 4,460,515, Cl. 260-665.00R.
Mosbach, Erwin H.; Ayengar, Narayan K. N.; and McSherry, Charles K., to Beth Israel Medical Center. Chemical synthesis. 4,460,509, Cl. 260-239.500.
Moseley, Douglas. Catheter anchor tape. 4,460,356, Cl. 604-180.000.
Mostek Corporation: *See*—
Jiang, Ching-Lin; and Taylor, David L., 4,460,978, Cl. 365-154.000.
Motorola, Inc.: *See*—
Bynum, Byron G.; Gray, Randall C.; and Jarrett, Robert B., 4,460,865, Cl. 323-313.000.
Heinle, Preston J., 4,460,537, Cl. 264-272.170.
Priniski, David J., 4,461,026, Cl. 381-98.000.
Ray, Kenneth I., 4,460,864, Cl. 323-313.000.
Rogers, William O., 4,460,917, Cl. 357-81.000.
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Moyer, Elmo E.: *See*—
Aiken, Leroy W.; and Moyer, Elmo E., 4,460,954, Cl. 363-75.000.
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Trappmann, Klaus; and Kruger, Wolfgang, 4,460,311, Cl. 415-116.000.
Mueller, Herbert, to BASF Aktiengesellschaft. Purification of polytetramethylene ether-glycols. 4,460,796, Cl. 568-617.000.
Mulder, Gerard W. Method for polishing, deburring and descaling stainless steel. 4,460,479, Cl. 252-79.400.
Mullaney, Peter, to Huyck Corporation. Method of making dryer fabric having zones of different permeability. 4,460,023, Cl. 139-383.00A.
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Schulte-Elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., 4,460,792, Cl. 568-341.000.
Muller, Friedrich E.; Oesterwind, G. Wolfgang; and Nothdurft, Jurgen, to Anton Piller GmbH & Co. KG. Centrifugal-chamber separating apparatus. 4,460,391, Cl. 55-343.000.
Muller, Gerd; Koller, Manfred; and Sydekum, Heinz, to Fichtel & Sachs AG. Continuously open throttling fluid passage device for shock absorbers. 4,460,074, Cl. 188-322.140.
Muller, Otto: *See*—
Weber, Robert; Koppl, Alois; Forner, Siegfried; Kohlert, Erich; and Muller, Otto, 4,460,920, Cl. 358-100.000.
Muller, Ulrich: *See*—
Lippuner, Werner; and Muller, Ulrich, 4,459,757, Cl. 33-234.000.
Multimatic-Maschinen GmbH. & Co.: *See*—
Grandi, Vittorio, 4,459,831, Cl. 68-18.00R.
Munch, Walter: *See*—
Buser, Werner; Keller, Pierre; and Munch, Walter, 4,460,869, Cl. 324-200.000.
Munger, Stanley H.: *See*—
Gruetzmacher, Robert R.; and Munger, Stanley H., 4,460,675, Cl. 430-300.000.
Munzer, Manfred: *See*—
Elser, Wilhelm; and Munzer, Manfred, 4,460,721, Cl. 524-35.000.
Murai, Atsushi: *See*—
Terano, Minoru; Kimura, Kouhei; Murai, Atsushi; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,460,701, Cl. 502-104.000.
Murakami, Shohachi: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,460,774, Cl. 544-366.000.

Murakami, Takashi; and Higuchi, Takeshi, to Fuji Photo Optical Co., Ltd. Device for producing a line of illumination. 4,460,939, Cl. 362-31.000.

Murakawa, Kyohei: *See*—
Hashimoto, Kaoru; Niwa, Koichi; and Murakawa, Kyohei, 4,460,916, Cl. 357-80.000.

Murase, Katsumi; Tamama, Teruo; Amemiya, Yoshihito; and Mizushima, Yoshihiko, to Nippon Telegraph & Telephone Public Corporation. Method of manufacturing insulating film and electric device utilizing the same. 4,460,417, Cl. 148-187.000.

Murata, Mitsuo: *See*—
Saeki, Tsuyoshi; Kawashima, Katsuhiro; Murata, Mitsuo; and Oota, Mituhiro, 4,460,034, Cl. 164-478.000.

Muroga, Goro: *See*—
Iijima, Hiroshi; Moriya, Kunihiko; Tate, Kazuhito; Muroga, Goro; Yanagida, Kazuhiro; Nakamura, Yoshikazu; Inoue, Akiyoshi; and Higashi, Masahiro, 4,460,454, Cl. 208-40.000.
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Murr, Paul G.; and Turner, William F. Combination switching connector. 4,460,811, Cl. 200-51.030.

Murray, Jean P.; Bohn, David C.; and Bengtson, Darroll D., to Rosemount Inc. Electromagnetic flowmeter. 4,459,857, Cl. 73-861.120.

Muz, Edwin, to Nicolay GmbH. Electrical connector. 4,460,231, Cl. 339-113.00R.

Myers, David R.: *See*—
Chamberlain, Michael J.; Myers, David R.; and Furlong, Donald R., 4,460,215, Cl. 297-14.000.

Mylstar Electronics, Inc.: *See*—
Krynski, Edward P., 4,460,175, Cl. 273-127.00R.

Nadella: *See*—
Mallet, Bernard, 4,460,290, Cl. 403-373.000.

Nagao, Takehisa: *See*—
Ataka, Matsuo; Aoki, Itaru; Horita, Takashi; and Nagao, Takehisa, 4,460,118, Cl. 228-146.000.

Nagasawa, Takashi; and Shimura, Junichi, to Sekisui Jushi Kabushiki Kaisha. Self-straightening tape measure of synthetic resin and a process for preparing the same. 4,459,753, Cl. 33-137.00L.

Naito, Atsushi; Nakagawa, Fumio; Okazaki, Takao; Terahara, Akira; Iwado, Seigo; and Yamazaki, Mitsuo, to Sankyo Company Limited. Enzyme inhibitor produced by cultivation of streptomyces microorganisms. 4,460,765, Cl. 536-26.000.

Najman, Michel, to Thomson-CSF. Low consumption, wide-band linear amplifier operating in sliding class A. 4,460,876, Cl. 330-296.000.

Nakagawa, Fumio: *See*—
Naito, Atsushi; Nakagawa, Fumio; Okazaki, Takao; Terahara, Akira; Iwado, Seigo; and Yamazaki, Mitsuo, 4,460,765, Cl. 536-26.000.

Nakagawa, Kazuyuki: *See*—
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,460,593, Cl. 424-258.000.

Nakagawa, Yoshio: *See*—
Takahashi, Shiro; Nakagawa, Yoshio; and Hosoda, Yutaka, 4,460,524, Cl. 264-26.000.

Nakaguchi, Osamu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Kada, Satoshi; and Hashimoto, Masashi, 4,460,502, Cl. 260-112.50R.

Nakahira, Tomotake. Apparatus for turning hose. 4,460,111, Cl. 223-43.000.

Nakai, Hiroshi: *See*—
Kozai, Katsuya; Fujita, Yoshihiro; Shibata, Tadayoshi; Kikuchi, Hisashi; Nakai, Hiroshi; and Ichii, Hirokazu, 4,460,255, Cl. 354-86.000.

Nakamichi Corporation: *See*—
Yamada, Fumiaki, 4,460,934, Cl. 360-12.300.

Nakamura, Akira: *See*—
Takematsu, Tetsuo; Segawa, Hirozo; Miura, Takamaro; Ataka, Toshiei; Chatani, Michio; and Nakamura, Akira, 4,460,403, Cl. 71-93.000.

Nakamura, Kazumoto: *See*—
Kihara, Junji; Watabe, Keiji; Douya, Kouichi; Nakamura, Kazumoto; and Takeuchi, Shouzo, 4,459,842, Cl. 73-7.000.

Nakamura, Norihiko: *See*—
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Mizutani, Shunsuke; and Sakakibara, Yozo, 4,460,518, Cl. 261-39.00A.

Nakamura, Shigeo: *See*—
Hattori, Masayuki; and Nakamura, Shigeo, 4,460,955, Cl. 363-91.000.

Nakamura, Sukenori; Igarashi, Akira; and Matsukawa, Hiroharu, to Fuji Photo Film Co., Ltd. Heat-sensitive recording material. 4,460,626, Cl. 427-150.000.

Nakamura, Taku: *See*—
Ogawa, Masashi; Ishigaki, Kunio; Iwasaki, Nobuyuki; and Nakamura, Taku, 4,460,680, Cl. 430-434.000.

Nakamura, Yoshikazu: *See*—
Iijima, Hiroshi; Moriya, Kunihiko; Tate, Kazuhito; Muroga, Goro; Yanagida, Kazuhiro; Nakamura, Yoshikazu; Inoue, Akiyoshi; and Higashi, Masahiro, 4,460,454, Cl. 208-40.000.

Nakamuta, Shozo, to Pioneer Video Corporation. Time base correcting device for audio and video signals. 4,460,926, Cl. 358-325.000.

Nakanishi Dental Mfg. Co., Ltd.: *See*—
Nakanishi, Toshimasa, 4,460,341, Cl. 433-122.000.

Nakanishi, Toshimasa, to Nakanishi Dental Mfg. Co., Ltd. Dental handpiece. 4,460,341, Cl. 433-122.000.

Nakano, Joji: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,460,774, Cl. 544-366.000.

Nakano, Masahide: *See*—
Hayatsu, Hikoya; and Nakano, Masahide, 4,460,475, Cl. 210-674.000.

Nakao, Masami: *See*—
Tadokoro, Tomoo; Nakao, Masami; Okimoto, Haruo; and Iwaki, Masato, 4,459,809, Cl. 60-602.000.

Nakayama, Akira: *See*—
Yamamoto, Makoto; Nakayama, Akira; and Iwata, Riso, 4,460,753, Cl. 526-62.000.

Nanci, James R.; and MacGregor, James, to Ralph A. Hiller Company. Valve stem actuator. 4,460,009, Cl. 137-243.600.

Nanko, Hideaki, to Sanyo Electric Co., Ltd. Digital signal receiver. 4,461,002, Cl. 371-47.000.

Nash, Donald H.: *See*—
Lese, Gregory; and Nash, Donald H., 4,461,013, Cl. 375-65.000.

Nassau Recycle Corporation: *See*—
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,459,892, Cl. 83-880.000.

Nasuda, Yutaka: *See*—
Tobinaga, Motoi; and Nasuda, Yutaka, 4,459,951, Cl. 123-198.0DC.

National Can Corporation: *See*—
Zenger, Richard D., 4,459,793, Cl. 53-434.000.

National Research Development Corporation: *See*—
Richardson, Paul C. A.; and Stevens, Andrew L., 4,459,854, Cl. 73-644.000.

National Service Industries: *See*—
Malola, Hane M., 4,460,948, Cl. 362-396.000.

National Starch and Chemical Corp.: *See*—
Barndt, Richard L.; Zwiercan, Gary A.; and Trubiano, Paolo C., 4,460,617, Cl. 426-609.000.
Schmidt, Robert C., Jr.; Decowski, Stanley J., Jr.; and Puletti, Paul P., 4,460,728, Cl. 524-271.000.

Navarro, Roger: *See*—
Ducros, Luc; Navarro, Roger; and Kaeser, Charles, 4,460,109, Cl. 222-94.000.

Nayler, John H. C., to Beecham Group P.L.C. 3-Carboxybenzyl cephems. 4,460,582, Cl. 424-246.000.

NCR Corporation: *See*—
Thomas, Jacob E., 4,460,905, Cl. 346-140.00R.

NECCHI Societa per Azioni: *See*—
Giuffrida, Giorgio G., 4,459,820, Cl. 62-238.600.

Neefe, Charles W. Method of making cosmetic contact lenses. 4,460,523, Cl. 264-1.900.

Neils, William C.: *See*—
Avrea, Walter C.; and Neils, William C., 4,459,832, Cl. 70-14.000.

Nelle, Guenther, to Dr. Johannes Heidenhain GmbH. Selection element housing for incremental measuring apparatus. 4,459,751, Cl. 33-125.00C.

Nelson, John A.: *See*—
Wheaton, Robert B.; Nelson, John A.; and Scherpereel, Donald E., 4,460,628, Cl. 427-214.000.

Nelson, Kerry S., to Minnesota Mining and Manufacturing Company. Electrographic imaging apparatus. 4,460,907, Cl. 346-153.100.

Nemoto, Shigeru: *See*—
Saeki, Yukio; Nemoto, Shigeru; and Tokunaga, Yukio, 4,460,716, Cl. 523-145.000.
Saeki, Yukio; Nemoto, Shigeru; and Tokunaga, Yukio, 4,460,717, Cl. 523-145.000.

Neri, Guido: *See*—
Moro, Luigi; Neri, Guido; and Rigamonti, Alessandro, 4,460,577, Cl. 424-180.000.

Neuray, Dieter; Margotte, Dieter; Tresper, Erhard; and Jacobs, Gunter, to Bayer Aktiengesellschaft. Reacting polycarbonate resin with aryl chlorocarbonate to improve aging characteristics. 4,460,752, Cl. 525-462.000.

Neuromed, Inc.: *See*—
Borkan, William N., 4,459,989, Cl. 128-421.000.

Nevitt, Thomas D.: *See*—
Hensley, Albert L., Jr.; Miller, Jeffrey T.; Nevitt, Thomas D.; and Tait, A. Martin, 4,460,698, Cl. 502-66.000.

New York University: *See*—
Vilcek, Jan T.; and Yip, Yum K., 4,460,685, Cl. 435-70.000.

Newkirk, David D., to BASF Wyandotte Corporation. Polyalkylene oxide lubricants of improved oxidative stability. 4,460,486, Cl. 252-8.900.

Newton, Kenneth C.; Wallace, Robert P.; and Ohnell, Ernst, to Programmed Marketing, Inc. Telephone terminal assembly. 4,460,233, Cl. 339-122.00R.

Newton, Richard J.: *See*—
Ward, Ernest M.; Curry, Eugene L.; and Newton, Richard J., 4,461,005, Cl. 372-10.000.

NGK Insulators, Ltd.: *See*—
Kato, Kiminari, 4,460,527, Cl. 264-56.000.

NI Industries, Inc.: *See*—
Silvis, John E.; and Fant, William W., 4,460,167, Cl. 267-42.000.

Nichols, Robert L., to American Hospital Supply Corp. Vacuum port connector assembly on fluid collection apparatus. 4,460,361, Cl. 604-319.000.

Nicklous, Rebecca E. Needlework tool and finger protector. 4,460,113, Cl. 223-101.000.
Nicolay GmbH: *See*—
Muz, Edwin, 4,460,231, Cl. 339-113.00R.
Niederholtmeyer, Werner J. Process and apparatus for utilizing waste oil. 4,460,328, Cl. 431-11.000.
Nihon Dixie Company Limited: *See*—
Iioka, Akira; and Suzuki, Shoichi, 4,460,348, Cl. 493-108.000.
Nihon Radiator Co., Ltd.: *See*—
Kitsukawa, Akira, 4,460,104, Cl. 220-304.000.
Nilles, Karl-Heinz: *See*—
Blaiius, Ewald; and Nilles, Karl-Heinz, 4,460,474, Cl. 210-679.000.
Nippon Electric Co., Ltd.: *See*—
Hirano, Akira; and Koga, Toshio, 4,460,923, Cl. 358-136.000.
Nippon Gakki Kabushiki Kaisha: *See*—
Omoto, Hideo, 4,460,991, Cl. 369-230.000.
Nippon Kogaku K.K.: *See*—
Fukuhara, Toru, 4,460,258, Cl. 354-402.000.
Ogasawara, Akira, 4,460,257, Cl. 354-402.000.
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Nippon Oil Co., Ltd.: *See*—
Takashima, Hiroaki; Kato, Osamu; Uemura, Seiichi; Yamamoto, Shunichi; and Hirose, Takao, 4,460,557, Cl. 423-447.100.
Tsuchiya, Shozo; Ohshima, Akio; and Hayashi, Hideo, 4,460,724, Cl. 524-77.000.
Nippon Soken, Inc.: *See*—
Fukami, Akira; and Okamoto, Kunio, 4,460,388, Cl. 55-269.000.
Inagaki, Mitsuo; Ito, Seitoku; and Kasagi, Takao, 4,459,817, Cl. 62-196.300.
Kamiya, Sigeru; Takagi, Shigeru; Nozawa, Masaei; Tomita, Masahiro; and Hayashi, Nobutoshi, 4,459,805, Cl. 60-303.000.
Nippon Steel Corporation: *See*—
Ataka, Matsuo; Aoki, Itaru; Horita, Takashi; and Nagao, Takehisa, 4,460,118, Cl. 228-146.000.
Hirai, Hidefumi; Komiyama, Makoto; and Hara, Susumu, 4,460,384, Cl. 55-36.000.
Tsubakihara, Osamu; Kagaya, Koji; Okada, Hiroo; and Kawashima, Katsuhiro, 4,460,033, Cl. 164-454.000.
Nippon Telegraph & Telephone Public Corp.: *See*—
Hirata, Kazuo; and Oda, Masatoshi, 4,460,413, Cl. 148-1.500.
Matsumoto, Michito; Kakii, Toshiaki; and Toda, Yuichi, 4,460,820, Cl. 219-385.000.
Murase, Katsumi; Tamama, Teruo; Amemiya, Yoshihito; and Mizushima, Yoshihiko, 4,460,417, Cl. 148-187.000.
Yamada, Junzo; Mano, Tsuneo; and Inoue, Junichi, 4,460,998, Cl. 371-10.000.
Nippon Zeon Co. Ltd.: *See*—
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Nippondenso Co., Ltd.: *See*—
Hayashi, Toshio, 4,459,967, Cl. 123-634.000.
Tamaki, Kazuyoshi, 4,461,003, Cl. 371-66.000.
Yoshimi, Akiro; Takemi, Akio; and Suzuki, Kazuyoshi, 4,460,036, Cl. 165-12.000.
Nishi, Koichi: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, 4,460,256, Cl. 354-173.110.
Nishidoi, Takashi: *See*—
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Nishijima, Hideo: *See*—
Fukushima, Isao; Kuwahara, Kazuyoshi; Nishijima, Hideo; Kobori, Yasunori; and Itoigawa, Keiichi, 4,460,953, Cl. 363-62.000.
Nishikawa, Akio; Shitara, Masashi; Era, Susumu; Fukushima, Toshiaki; Suzuki, Hiroshi; and Kohkame, Hisashi, to Hitachi, Ltd. Ether imides and process for producing the same. 4,460,783, Cl. 548-549.000.
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Hosokawa, Takehiko, to Honda Giken Kogyo Kabushiki Kaisha; and Matsushita Electric Industrial Co., Ltd. Fuel injection control method. 4,459,961, Cl. 123-491.000.
Nishimura, Yuji: *See*—
Sasase, Naoshi; Inagaki, Nobukatsu; Hayashi, Yoshihiro; and Nishimura, Yuji, 4,460,198, Cl. 280-804.000.
Nishino, Atsushi; Sonetaka, Kazunori; Kimura, Kunio; and Watanabe, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Method of forming porcelain enamels on aluminized steel. 4,460,630, Cl. 427-376.200.
Nishitani, Takeshi: *See*—
Koumi, Noboru; Nishitani, Takeshi; Okayasu, Kazuo; and Takamizawa, Yoshikazu, 4,460,012, Cl. 137-454.600.
Nissan Motor Company, Limited: *See*—
Kita, Toru, 4,459,847, Cl. 73-118.200.
Makajima, Yasuo; Hayashi, Yoshimasa; and Yoshimura, Tooru, 4,459,804, Cl. 60-274.000.
Mizote, Masanori; and Uekusa, Yasuyuki, 4,460,035, Cl. 165-12.000.
Seki, Shojiro, 4,459,834, Cl. 70-256.000.
Suzuki, Kunihiko, 4,459,874, Cl. 74-745.000.
Tsuda, Hiroshi; and Matsuoka, Hideoki, 4,460,217, Cl. 297-361.000.
Watanaby, Takeaki, 4,459,901, Cl. 98-2.040.
Nissin Kogyo Kabushiki Kaisha: *See*—
Seki, Masayuki, 4,460,071, Cl. 188-73.390.
Nitschmann, Karl: *See*—
Dolata, Hans; Meyle, Werner; Kelbert, Adam; and Nitschmann, Karl, 4,459,890, Cl. 83-834.000.
Nitta, Jun: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,460,774, Cl. 544-366.000.
Niwa, Koichi: *See*—
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NL Industries, Inc.: *See*—
Hazelrigg, Keith R.; and Locheed, Edward W., Jr., 4,460,156, Cl. 251-149.300.
Schaeper, Gary R.; and Olson, Richard A., 4,460,149, Cl. 251-1.00B.
Noble, William B.: *See*—
Cole, Carey S.; and Noble, William B., 4,460,244, Cl. 350-112.000.
Nobles, John E.; and Swenson, Leonard K., to Pritchard Corporation, The. Method and apparatus for producing food grade carbon dioxide. 4,460,395, Cl. 62-18.000.
Noda, Tadao: *See*—
Yoshida, Masazumi; Noda, Tadao; and Inoue, Masayoshi, 4,460,668, Cl. 430-31.000.
Noda, Teruyoshi; and Ichikawa, Iwao, to Sony Corporation. Apparatus for feeding electric circuit elements. 4,460,108, Cl. 221-94.000.
Noguchi, Masahiro: *See*—
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Nojiri, Chuhei: *See*—
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Nomiyama, Neal T.: *See*—
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Nomura, Kenji: *See*—
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Nomura, Nobutaka: *See*—
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Nomura, Ryuji: *See*—
Haraga, Tetsuo; Nomura, Ryuji; Kai, Isao; and Yamasaki, Motoyoshi, 4,460,629, Cl. 427-221.000.
Noorlander, Daniel O. Teat cup assembly. 4,459,938, Cl. 119-14.490.
Noorlander, Daniel O. Disposable inner sleeve for inflation assembly. 4,459,939, Cl. 119-14.490.
Noorlander, Daniel O. Milk collecting system for automatic milk apparatus. 4,459,940, Cl. 119-14.540.
Norda Tubazioni S.p.A.: *See*—
Ziliani, Franco, 4,460,112, Cl. 223-88.000.
Nordiska Ackumulatorfabriker Noack AB: *See*—
Skold, Ulf A. C., 4,460,661, Cl. 429-89.000.
Nordson Corporation: *See*—
Harjar, Martin J.; and Noss, Jeffrey S., 4,459,898, Cl. 92-61.000.
Ramazzotti, Dario J.; and Cohen, Sherman E., 4,460,140, Cl. 248-75.000.
Nordstrom, Kjell H., to Safelink AB. Shear beam load cell. 4,459,863, Cl. 73-862.660.
Normier, Geard: *See*—
d'Hinterland, Lucien D.; Normier, Geard; Pinel, Anne-Marie; and Durand, Jacques, 4,460,575, Cl. 424-92.000.
North American Mfg. Company: *See*—
Watson, James E., 4,460,334, Cl. 432-223.000.
North Carolina State Univ. at Raleigh: *See*—
Hassan, Awatif E.; Haddock, William H.; and Zink, Randolph L., 4,459,924, Cl. 111-2.000.
Northern Telecom Limited: *See*—
Charlebois, Leonard J.; and Huszarik, Fred A., 4,460,159, Cl. 254-134.30R.
Harman, Stephen G., 4,460,875, Cl. 330-286.000.
Shepherd, Frank R.; and Westwood, William D., 4,459,739, Cl. 29-571.000.
Norton, John P., to Engineered Air Systems, Inc. Method and apparatus for liquid freezing. 4,459,812, Cl. 62-75.000.
Norwich Eaton Pharmaceuticals, Inc.: *See*—
Portlock, David E., 4,460,775, Cl. 546-147.000.
Nose, Yasushi: *See*—
Ohashi, Takehisa; Shimazaki, Masami; Nomura, Kenji; Nose, Yasushi; and Watanabe, Kiyoshi, 4,460,780, Cl. 548-201.000.
Noss, Jeffrey S.: *See*—
Harjar, Martin J.; and Noss, Jeffrey S., 4,459,898, Cl. 92-61.000.
Notermann, Walter F., to Lake Region Products, Inc. Water ski training apparatus. 4,460,344, Cl. 441-73.000.
Notestine, Richard H., to Scott & Fetzer Company, The. Sweeping machine with dirt and debris control flap. 4,459,719, Cl. 15-349.000.
Nothdurft, Jurgen: *See*—
Muller, Friedrich E.; Oesterwind, G. Wolfgang; and Nothdurft, Jurgen, 4,460,391, Cl. 55-343.000.
NOVA/Husky Research Corporation Ltd.: *See*—
Thompson, Bradley G.; and Jack, Thomas R., 4,460,043, Cl. 166-246.000.
Novotny, Jiri: *See*—
Hyanova, Blanka; and Novotny, Jiri, 4,459,850, Cl. 73-587.000.
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Labbe, Francis A. M.; and Nowers, John R., 4,459,998, Cl. 131-62.000.
Nozawa, Masaei: *See*—
Kamiya, Sigeru; Takagi, Shigeru; Nozawa, Masaei; Tomita, Masahiro; and Hayashi, Nobutoshi, 4,459,805, Cl. 60-303.000.

Numata, Kou; and Nomura, Nobutaka, to Hitachi, Ltd. Terminal apparatus using register information to determine the meaning of a buffer stored field defining character. 4,460,971, Cl. 364-900.000.

Nyqvist, Harry: *See—*
Mases, Per E.; Lundquist, Gunnar; Nyqvist, Harry; and Carlsson, Torsten, 4,460,014, Cl. 137-614.180.

Obadal, Richard D., to Deere & Company. Resilient mount for supporting a cab structure on the chassis of a vehicle. 4,460,168, Cl. 267-140.100.

Obear, Robert F.: *See—*
Odell, Jack L., II; and Obear, Robert F., 4,459,783, Cl. 51-165.740.

O'Brien, Robert D.; and Schmecker, Elizabeth C., to USM Corporation. Temperature control for shell type rolls. 4,459,726, Cl. 29-116.0AD.

Ocean Phoenix Holdings N.V.: *See—*
Ffooks, Roger C., 4,459,929, Cl. 114-74.00A.

Oda, Masatoshi: *See—*
Hirata, Kazuo; and Oda, Masatoshi, 4,460,413, Cl. 148-1.500.

Odell, Jack L., II; and Obear, Robert F., to Western Gear Machinery Co. Workpiece weighing system for conditioning grinders. 4,459,783, Cl. 51-165.740.

O'Donnell, John F., to Development Engineering and Associates. Flanged bearing mount. 4,460,285, Cl. 384-152.000.

Oerter, Karl E.: *See—*
Heinrich, Alfred A.; and Oerter, Karl E., 4,460,882, Cl. 335-225.000.

Oerum Sogns Mejeri ApS: *See—*
Kristiansen, Bjarne; Christiansen, Tage; Jensen, Poul F.; Pedersen, Bent; Kjaer, Jens B.; Kristensen, Kjeld; Jensen, Svend O.; Lindstroem, Poul; and Kjaer, Bjarne, 4,460,609, Cl. 426-39.000.

Oesterreichische Schiffswerften Aktiengesellschaft: *See—*
Schulz, Helmuth; and Bacher, Helmut, 4,460,277, Cl. 366-76.000.

Oesterwind, G. Wolfgang: *See—*
Muller, Friedrich E.; Oesterwind, G. Wolfgang; and Nothdurft, Jurgen, 4,460,391, Cl. 55-343.000.

Oettinger, Peter E.; and Lee, Chunghsin, to Thermo Electron Corporation. Laser stimulated high current density photoelectron generator and method of manufacture. 4,460,831, Cl. 250-492.200.

O'Farrell, Charles E.: *See—*
Owens, Joseph M.; and O'Farrell, Charles E., 4,460,734, Cl. 524-376.000.

Ogasawara, Akira, to Nippon Kogaku K.K. Focus regulating device for camera with automatic exposure control. 4,460,257, Cl. 354-402.000.

Ogata, Nobutaka, to Matsushita Electric Industrial Co., Ltd. Self cleaning steam iron. 4,459,771, Cl. 38-77.800.

Ogata, Yasuhiro: *See—*
Hosoi, Noriyuki; Matsukawa, Hiroharu; and Ogata, Yasuhiro, 4,460,199, Cl. 346-207.000.

Ogawa, Hiroshi, to Canon Kabushiki Kaisha. Removable developing device with shutter. 4,460,267, Cl. 355-3.0DD.

Ogawa, Hiroyasu; Izumi, Kazuo; and Shimazaki, Kenzi, to Toho Beslon Co., Ltd. Acrylonitrile fibers, a process for producing acrylonitrile fibers, as well as producing peroxidized fibers, fibrous active carbon or carbon fibers therefrom. 4,460,650, Cl. 428-389.000.

Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, to Canon Kabushiki Kaisha. Photoconductive member with α-Si and C, U or D and dopant. 4,460,669, Cl. 430-57.000.

Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, to Canon Kabushiki Kaisha. Photoconductive member with α-Si and C, N or O and dopant. 4,460,670, Cl. 430-57.000.

Ogawa, Masashi; Ishigaki, Kunio; Iwasaki, Nobuyuki; and Nakamura, Taku, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,460,680, Cl. 430-434.000.

Ogilvie, Kelvin K., to ens Bio Logicals inc. Stimulation of viral growth rate. 4,460,690, Cl. 435-235.000.

Ohama, Tadahiro, to Fujisawa Pharmaceutical Co., Ltd. Vial suspender. 4,460,143, Cl. 248-359.000.

Ohashi, Takehisa; Shimazaki, Masami; Nomura, Kenji; Nose, Yasushi; and Watanabe, Kiyoshi, to Kanegafuchi Chemical Industry Company, Ltd. Process for preparation of optically active thiol compounds. 4,460,780, Cl. 548-201.000.

Ohguro, Tadafumi: *See—*
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, 4,460,256, Cl. 354-173.110.

Ohkubo, Akira: *See—*
Abe, Katsuhiro; Yamauchi, Shin-ichi; and Ohkubo, Akira, 4,460,743, Cl. 525-68.000.

Ohloff, Gunther: *See—*
Giersch, Wolfgang; and Ohloff, Gunther, 4,460,498, Cl. 252-522.00R.

Ohnell, Ernst: *See—*
Newton, Kenneth C.; Wallace, Robert P.; and Ohnell, Ernst, 4,460,233, Cl. 339-122.00R.

Ohniwa, Kohichi, to Mitsubishi Denki Kabushiki Kaisha. Industrial automatic pattern stitching machine. 4,459,926, Cl. 112-121.120.

Ohno, John M., to General Electric Company. Brazable layer for indexable cutting insert. 4,460,382, Cl. 51-307.000.

Ohshima, Akio: *See—*
Tsuchiya, Shozo; Ohshima, Akio; and Hayashi, Hideo, 4,460,724, Cl. 524-77.000.

Ohshima, Yoshimasa: *See—*
Koizumi, Mitsuyoshi; Akiyama, Nobuyuki; and Ohshima, Yoshimasa, 4,460,273, Cl. 356-237.000.

Ohta, Kazutoshi, to Mitsubishi Denki Kabushiki Kaisha. Crime prevention apparatus for elevators. 4,460,066, Cl. 187-29.00R.

Ohta, Shigenori: *See—*
Furukawa, Tadayasu; Taguchi, Tokuichi; Yamamoto, Kazuhiro; and Ohta, Shigenori, 4,460,615, Cl. 426-657.000.

Ohtake, Etsuo; and Higuchi, Akihiko, to Daicel Chemical Industries, Ltd. Nitrocellulose composition and process for producing the same. 4,460,411, Cl. 106-183.000.

Oji Paper Co., Ltd.: *See—*
Yasuda, Tokuro; and Oka, Akinori, 4,460,671, Cl. 430-98.000.

Oka, Akinori: *See—*
Yasuda, Tokuro; and Oka, Akinori, 4,460,671, Cl. 430-98.000.

Oka, Hitoshi: *See—*
Tanaka, Isamu; Oka, Hitoshi; Tomizawa, Akira; and Kikuchi, Hiroshi, 4,460,718, Cl. 523-400.000.

OKA Valve Mfg. Co., Ltd.: *See—*
Koumi, Noboru; Nishitani, Takeshi; Okayasu, Kazuo; and Takamizawa, Yoshikazu, 4,460,012, Cl. 137-454.600.

Okada, Hiroo: *See—*
Tsubakihara, Osamu; Kagaya, Koji; Okada, Hiroo; and Kawashima, Katsuhiro, 4,460,033, Cl. 164-454.000.

Okada, Yoshio: *See—*
Igarashi, Yuriko; and Okada, Yoshio, 4,460,722, Cl. 523-206.000.

Okamoto, Kazutoshi: *See—*
Sakano, Kenji; Sakanaka, Hiroo; and Okamoto, Kazutoshi, 4,459,966, Cl. 123-573.000.

Okamoto, Kunio: *See—*
Fukami, Akira; and Okamoto, Kunio, 4,460,388, Cl. 55-269.000.

Okamoto, Takanori; Onishi, Takaharu; and Matsuda, Hideaki, to Okura Kogyo Kabushiki Kaisha. Anaerobically curable compositions. 4,460,760, Cl. 526-301.000.

Okayasu, Kazuo: *See—*
Koumi, Noboru; Nishitani, Takeshi; Okayasu, Kazuo; and Takamizawa, Yoshikazu, 4,460,012, Cl. 137-454.600.

Okazaki, Takao: *See—*
Naito, Atsushi; Nakagawa, Fumio; Okazaki, Takao; Terahara, Akira; Iwado, Seigo; and Yamazaki, Mitsuo, 4,460,765, Cl. 536-26.000.

Okimoto, Haruo: *See—*
Tadokoro, Tomoo; Nakao, Masami; Okimoto, Haruo; and Iwaki, Masato, 4,459,809, Cl. 60-602.000.

Okubo, Hiroshi, to Omron Tateisielectronics Co. Identifying system. 4,461,028, Cl. 382-15.000.

Okudaira, Sadao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens focusing system. 4,460,251, Cl. 350-427.000.

Okura Kogyo Kabushiki Kaisha: *See—*
Okamoto, Takanori; Onishi, Takaharu; and Matsuda, Hideaki, 4,460,760, Cl. 526-301.000.

Okuyama, Kiyotaka: *See—*
Hosaka, Akihiko; Okuyama, Kiyotaka; and Kanazawa, Kiyoto, 4,460,651, Cl. 428-402.000.

Oldham, Keith: *See—*
Jones, Derrick F.; and Oldham, Keith, 4,460,584, Cl. 424-249.000.

O'Leary, Richard P.; and Morris, Robert V. Indexing controller apparatus for cooling water tower systems. 4,460,008, Cl. 137-93.000.

Olin Corporation: *See—*
Bunch, J. David, 4,459,894, Cl. 86-1.00R.
Frentzel, Richard L.; Rua, Louis, Jr.; and Pacheco, Anne L., 4,460,738, Cl. 524-591.000.
Gates, William J.; and Zwirlein, John F., 4,460,126, Cl. 239-112.000.

Oliva, Ferdinand P.: *See—*
Kurland, Marvin; Oliva, Ferdinand P.; and Wilson, Terry L., 4,459,927, Cl. 112-237.000.

Olofson, Peter M.: *See—*
Smith, George H.; and Olofson, Peter M., 4,460,677, Cl. 430-336.000.

Olsen, Per, to Carl F. Petersen I/S. Door handle assembly having a mechanism for preventing inadvertent loosening of the handle. 4,460,204, Cl. 292-356.000.

Olson, Donald O. Turbulent flow emitter. 4,460,129, Cl. 239-542.000.

Olson, Richard A.: *See—*
Schaeper, Gary R.; and Olson, Richard A., 4,460,149, Cl. 251-1.00B.

Olszanski, Henry H.: *See—*
Lender, Adam; and Olszanski, Henry H., 4,461,011, Cl. 375-18.000.

Olympus Optical Co. Ltd.: *See—*
Kadogaki, Tsuneaki, 4,460,824, Cl. 235-375.000.
Karaki, Kouichi, 4,459,986, Cl. 128-303.100.
Mizokami, Kazunori, 4,460,262, Cl. 354-414.000.
Osanai, Akira, 4,460,136, Cl. 242-202.000.
Osanai, Akira, 4,460,932, Cl. 360-105.000.
Yamazaki, Masaru; Miyashita, Kiyoshi; Kawazu, Hideyuki; and Ishimoto, Osamu, 4,460,269, Cl. 355-14.0SH.

Omoto, Hideo, to Nippon Gakki Kabushiki Kaisha. Pickup device for disc player. 4,460,991, Cl. 369-230.000.

Omron Tateisielectronics Co.: *See—*
Okubo, Hiroshi, 4,461,028, Cl. 382-15.000.

Oneufer, Andrew S.: *See—*
Funk, Charles E.; and Oneufer, Andrew S., 4,460,540, Cl. 376-327.000.

Onishi, Takaharu: *See—*
Okamoto, Takanori; Onishi, Takaharu; and Matsuda, Hideaki, 4,460,760, Cl. 526-301.000.

Ono, Yoshimi: *See—*
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, 4,460,256, Cl. 354-173.110.

Onoguchi, Akira; and Yamazaki, Shigetomo, to Kabushiki Kaisha Akashi Seisakusho. Scanning electron microscope or similar equipment with tiltable microscope column. 4,460,827, Cl. 250-310.000.
Oota, Mituhiro: *See*—
Saeki, Tsuyoshi; Kawashima, Katsuhiro; Murata, Mitsuo; and Oota, Mituhiro, 4,460,034, Cl. 164-478.000.
Op de Beek, Johannes C. A., to U.S. Philips Corporation. Method of and device for determining a radiation absorption distribution in a part of a body. 4,460,961, Cl. 364-414.000.
Opheij, Willem G., to U.S. Philips Corporation. Apparatus for reading an optical record carrier. 4,460,990, Cl. 369-112.000.
Optelecom, Incorporated: *See*—
Goodman, Jack E., 4,459,746, Cl. 30-124.000.
Oravecz, Steve A.: *See*—
Kies, Jared R.; and Oravecz, Steve A., 4,459,891, Cl. 83-867.000.
Orban Associates, Inc.: *See*—
Orban, Robert A., 4,460,871, Cl. 328-169.000.
Orban, Robert A., to Orban Associates, Inc. Multiband cross-coupled compressor with overshoot protection circuit. 4,460,871, Cl. 328-169.000.
Orefice, Claudio: *See*—
Stevens, William P.; and Orefice, Claudio, 4,460,643, Cl. 428-284.000.
Organon Teknika Corporation: *See*—
Thompson, Ralph P., 4,460,555, Cl. 423-309.000.
Oriental Yeast Co. Ltd.: *See*—
Inoue, Tomoaki; Ishikawa, Yoichi; and Kaneko, Mitsunori, 4,460,451, Cl. 204-415.000.
Orlando, Charles M.; and Klopfer, Howard J., to General Electric Company. Process for preparation of hydroxyaryldialkylcarbinols. 4,460,800, Cl. 568-764.000.
Orlando, Charles M.: *See*—
Klopfer, Howard J.; and Orlando, Charles M., 4,460,798, Cl. 568-723.000.
O'Rorke, Blondale. Bracket for supporting a sign to a cylindrical post. 4,460,142, Cl. 248-231.000.
Ortner, Herbert: *See*—
Thumm, Helmut; Bahr, Theodor; and Ortner, Herbert, 4,460,132, Cl. 241-46.110.
Osakabe, Kuniharu: *See*—
Sakurai, Soichi; Fukuda, Kyohei; and Osakabe, Kuniharu, 4,460,844, Cl. 313-412.000.
Osaki, Masaaki: *See*—
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,460,593, Cl. 424-258.000.
Osanai, Akira, to Olympus Optical Co., Ltd. Tape-driving apparatus for a tape recorder. 4,460,136, Cl. 242-202.000.
Osanai, Akira, to Olympus Optical Co., Ltd. A method for setting heads of a cassette tape recorder and a mechanism for its practice. 4,460,932, Cl. 360-105.000.
Osato, Yoichi: *See*—
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,460,669, Cl. 430-57.000.
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,460,670, Cl. 430-57.000.
Ostermayer, Franz; and Zimmermann, Markus, to Ciba-Geigy Corporation. N-Alkylated aminoalcohols and their pharmaceutical compositions useful for the treatment of cardiac insufficiency. 4,460,580, Cl. 424-232.000.
Ozczakiewicz, Michael J.; Leising, Walter F.; and Wojciechowski, Matthew P., to Xerox Corporation. Ink jet ink handling system. 4,460,904, Cl. 364-75.000.
Otema, Martin. Security device. 4,460,093, Cl. 211-4.000.
Othenin-Girard, Andre, to Fabriques d'Horlogerie de Fontainemelon S.A. Mounting arrangement for printed circuits in electronic watches. 4,460,281, Cl. 368-88.000.
Otis Elevator Company: *See*—
Saxer, Albert J., 4,460,065, Cl. 187-29.00R.
Yasuda, Kentaro; Saxer, Albert J.; and Cilderman, Janis J., 4,459,754, Cl. 33-137.00R.
Otsuka Pharmaceutical Co., Ltd.: *See*—
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,460,593, Cl. 424-258.000.
Ott, Karl-Heinz: *See*—
Lindner, Christian; and Ott, Karl-Heinz, 4,460,749, Cl. 525-310.000.
Otto-Simon Carves Limited: *See*—
Corry, David B., 4,460,437, Cl. 202-262.000.
Outokumpu Oy: *See*—
Koistinen, Pauli A. T., 4,460,180, Cl. 277-3.000.
Overton, William C., Jr.: *See*—
Barclay, John A.; Overton, William C., Jr.; and Stewart, Walter F., 4,459,811, Cl. 62-3.000.
Owens-Corning Fiberglas Corporation: *See*—
Kies, Jared R.; and Oravecz, Steve A., 4,459,891, Cl. 83-867.000.
Owens-Illinois, Inc.: *See*—
Friberg, Nelson, 4,459,885, Cl. 83-74.000.
Libit, Sidney M., 4,460,100, Cl. 215-237.000.
Miller, John L., 4,460,084, Cl. 206-158.000.
Patek, Frank J., 4,459,756, Cl. 33-172.00R.
Owens, Joseph M.; and O'Farrell, Charles E., to Rohm and Haas Company. Self-leveling floor polish compositions. 4,460,734, Cl. 524-376.000.
Owens, Robert M.: *See*—
Convers, Ronald J.; and Owens, Robert M., 4,460,699, Cl. 502-84.000.
Oxenrider, Bryce C.; and Long, David J., to Allied Corporation. Acid chloride of pyromellitic anhydride. 4,460,785, Cl. 560-83.000.
Oy Wartsila Ab: *See*—
Hurskainen, Oiva, 4,459,835, Cl. 170-486.000.
Oyama, Satoshi: *See*—
Kamata, Isao; and Oyama, Satoshi, 4,460,937, Cl. 361-333.000.
Oyama, Yoshio, to Yoshida Kogyo K. K. Feed mechanism for elongate flexible article. 4,460,083, Cl. 198-486.000.
Pacheco, Anne L.: *See*—
Frentzel, Richard L.; Rua, Louis, Jr.; and Pacheco, Anne L., 4,460,738, Cl. 524-591.000.
Pacific Western Systems Inc.: *See*—
Harns, Timothy, 4,460,997, Cl. 371-10.000.
Schmidt, John D., 4,460,999, Cl. 371-21.000.
Paggini, Alberto: *See*—
Di Pietro, Raffaele; Paggini, Alberto; and Lagana', Vincenzo, 4,460,378, Cl. 44-54.000.
Palmer, Donald C. Belt grinding with controlled coolant flow. 4,459,782, Cl. 51-141.000.
Pan, Yen-Chi; and Stogryn, Eugene L., to Exxon Research and Engineering Co. Process for the removal of acid gases from hydrocarbon gases containing the same. 4,460,385, Cl. 55-73.000.
Panas, William R.: *See*—
Jarosz, John M.; and Panas, William R., 4,460,886, Cl. 337-148.000.
Pangburn, William E., to Haefliger, William W., a part interest. Flexible abrasive pad. 4,459,987, Cl. 128-355.000.
Paoletti, Jean-Claude, to Laboratoires Merck Sharp & Dohme - Chibret. Compensating container, notably for pharmaceutical products. 4,460,090, Cl. 206-540.000.
Pape, Klaus; and Ruhanu, Gerhard, to WABCO Fahrzeugbremsen GmbH. Anti-skid brake control system. 4,460,962, Cl. 364-426.000.
Paravigna, Zivko; Boursaud, Jack; and Tassart, Christian, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Station comprising two or more gas bottles for welding and other applications. 4,460,010, Cl. 137-259.000.
Parfree, Colin S.; and Worthington, Peter, to International Standard Electric Corporation. Method of making optical fiber cables. 4,460,419, Cl. 156-56.000.
Park, Yeun H.; Woo, Jong L.; and Kim, Hak M., to Kolon Industries Inc. Composite fiber. 4,460,649, Cl. 428-373.000.
Parker, David M.: *See*—
Pedersen, James R.; Parker, David M.; and Trechel, Robert G., 4,460,659, Cl. 428-675.000.
Parma, Glenn: *See*—
Burton, Robert; and Parma, Glenn, 4,459,727, Cl. 29-238.000.
Parot, Pierre: *See*—
Allemand, Robert; Laval, Michel; and Parot, Pierre, 4,460,830, Cl. 250-370.000.
Parrini, Carlo G., to Repro Master Electronic S.r.L. Printing machines used in photolithography, repro work, screen printing, and bromography. 4,460,272, Cl. 355-91.000.
Partington, Albert J., to Westinghouse Electric Corp. Blade group with pinned root. 4,460,316, Cl. 416-217.000.
Pasek, Eugene A.: *See*—
Harju, Philip H.; and Pasek, Eugene A., 4,460,784, Cl. 549-259.000.
Pasternack, Adalbert, to Dragerwerk A.G. Cooling suit system and heat exchanger construction. 4,459,822, Cl. 62-259.300.
Patek, Frank J., to Owens-Illinois, Inc. Apparatus and method for measuring the effective support height of a container base cup. 4,459,756, Cl. 33-172.00R.
Patent-Treuhand-Gesellschaft fur Elektrische-Glohlampen: *See*—
Fahnrich, Hans-Jurgen, 4,460,848, Cl. 315-101.000.
Pates, Anthony R.: *See*—
Jones, John C.; Pates, Anthony R.; Dewsberry, Roland; and Ryan, Paul A., 4,460,645, Cl. 428-323.000.
Pathan, Rajendra K. Hospital bed. 4,459,712, Cl. 5-81.00C.
Pavlich, Mary J., to Beecham Inc. Polyurethane foam impregnated with or coated with fabric conditioning agent, anti-microbial agent and anti-discolorant. 4,460,644, Cl. 428-314.400.
Paxton, Lee C.: *See*—
Sartain, Donald W.; Paxton, Lee C.; and Kastl, Melvin R., 4,459,711, Cl. 4-502.000.
Pearce, Richard J. B.: *See*—
Stutzbach, Ronald J.; and Pearce, Richard J. B., 4,460,663, Cl. 429-151.000.
Pearlman, Samuel, to RCA Corporation. Reducing glare from the surface of a glass viewing window. 4,460,621, Cl. 427-64.000.
Pearson, Gary L.: *See*—
Rasmussen, Robert F.; Smida, George R.; Wietecha, Robert L.; and Pearson, Gary L., 4,460,200, Cl. 285-18.000.
Pedersen, Bent: *See*—
Kristiansen, Bjarne; Christiansen, Tage; Jensen, Poul F.; Pedersen, Bent; Kjaer, Jens B.; Kristensen, Kjeld; Jensen, Svend O.; Lindstroem, Poul; and Kjaer, Bjarne, 4,460,609, Cl. 426-39.000.
Pedersen, James R.; Parker, David M.; and Trechel, Robert G., to General Electric Company. Copper alloy welding filler and method of use. 4,460,659, Cl. 428-675.000.
Peel, David D. Extensible mirror with hidden extending mechanism. 4,460,246, Cl. 350-305.000.
Peeters, Josephus B.: *See*—
Gratton, Arthur D.; McGhie, Terence V.; Whelan, Robert C.; and Peeters, Josephus B., 4,460,888, Cl. 337-290.000.
Pehl, Willis G.: *See*—
Bockwinkel, Joe L.; and Pehl, Willis G., 4,459,788, Cl. 52-535.000.
Peiffer, Dennis G.; Lundberg, Robert D.; Kowalik, Ralph M.; and Turner, S. Richard, to Exxon Research and Engineering Co. Drag

reduction agents for aqueous salt solutions. 4,460,758, Cl. 526-287.000.

Pelzner, Roger B.: *See—*
Stark, Marvin M.; Soelberg, Kenneth B.; and Pelzner, Roger B., 4,460,340, Cl. 433-91.000.

Penfold, Garn F.; and Rabe, David L., to Deere & Company. Baler with a controlled rate preservative applicator. 4,459,798, Cl. 56-341.000.

Pennwalt Corporation: *See—*
Dodge, Robert J., 4,460,061, Cl. 181-175.000.
Kamens, Ernest R., 4,460,714, Cl. 521-122.000.

Pensabene, Saverio F.: *See—*
Dinkler, Leonard R.; and Pensabene, Saverio F., 4,460,666, Cl. 429-236.000.

Perchthaler, Heinz; Syrowatka, Rupert; and Dietl, Werner, to Maschinenfabrik Andritz Aktiengesellschaft. Device for the regulation of a water-removing machine. 4,460,461, Cl. 210-104.000.

Perduijn, David J.: *See—*
Waanders, Jan W.; van Heek, Herman F.; Colson, Roger A.; and Perduijn, David J., 4,460,842, Cl. 310-338.000.

Perlini, Roberto. Suspension system for coupled vehicle axles. 4,460,196, Cl. 280-676.000.

Pernick, David: *See—*
Tsuchiya, Koji; and Pernick, David, 4,459,830, Cl. 66-140.00S.

Perplies, Eberhard: *See—*
Felcht, Utz-Hellmuth; and Perplies, Eberhard, 4,460,766, Cl. 536-84.000.

Perrin, Robert; and Fugier, Roger, to Isover Saint-Gobain. Process for the preparation of ortho-hydroxybenzyl alcohols. 4,460,799, Cl. 568-764.000.

Perry, Vince A. Self defense weapon. 4,460,174, Cl. 273-84.00R.

Perser, Donald A.; and Mohn, Erich W., to Ballert Orthopedic Corporation. Ankle and foot brace. 4,459,980, Cl. 128-80.00E.

Personal Products Company: *See—*
Chen, Franklin M. C.; and Jones, Archie L., 4,460,364, Cl. 604-387.000.

Persson, Lars B. I.: *See—*
Lung, Hans G.; and Persson, Lars B. I., 4,459,816, Cl. 62-183.000.

Peter, Dietmar, to Dr. Ing. H.C.F. Porsche Aktiengesellschaft. Bumper for vehicles, particularly motor vehicles. 4,460,206, Cl. 293-132.000.

Peters, Albin, to Wico Corporation. Post construction for pinball game. 4,460,176, Cl. 273-127.00C.

Petersen, Erwin, to WABCO Fahrzeugbremsen GmbH. Anti-skid brake control system for a multi-axle vehicle. 4,460,220, Cl. 303-119.000.

Petrak, Daniel R.: *See—*
Winkelbauer, Howard M.; Petrak, Daniel R.; Kleeb, Thomas R.; and Wang, Ke-Chin, 4,460,528, Cl. 264-65.000.

Petrik, Gerd; and Sachse, Rolf, to Helopharm W. Petrik & Co. 2-[2'-Hydroxy-3'-(1,1-dimethylpropylamino)-propoxy]-β-phenylpropiophenone, its physiologically acceptable acid addition salts, and pharmaceutical compositions. 4,460,605, Cl. 424-330.000.

Petrzilka, Martin; Schadt, Martin; and Villiger, Alois, to Hoffmann-La Roche Inc. Liquid crystal mixture. 4,460,770, Cl. 544-242.000.

Petta, John R. Levelling apparatus for vehicle mounted refrigerator. 4,459,813, Cl. 62-132.000.

Pettibone Corporation: *See—*
Lund, Robert S., 4,460,032, Cl. 164-195.000.

Pfeifer, Josef: *See—*
Reinehr, Dieter; and Pfeifer, Josef, 4,460,790, Cl. 564-511.000.

Philadelphia Gear Corporation: *See—*
DiPasquale, David A.; and Hammer, James J., 4,460,152, Cl. 251-26.000.

Philip Morris, Incorporated: *See—*
Sweeney, William R., 4,460,018, Cl. 137-807.000.

Phillips, Colin R.: *See—*
Rubin, Leon J.; Diosady, Levente L.; and Phillips, Colin R., 4,460,504, Cl. 260-123.500.

Phillips Petroleum Company: *See—*
Boston, Ernest B., 4,460,511, Cl. 260-446.000.
Johnson, Paul H., 4,460,558, Cl. 423-450.000.
McDaniel, Max P.; Sanbrano, John A.; and Johnson, Marvin M., 4,460,756, Cl. 526-106.000.
Rollmann, Kent W., 4,460,723, Cl. 524-70.000.
Wu, Yulin, 4,460,482, Cl. 252-8.55E.

Piccardi, Paolo: *See—*
Bettarini, Franco; Massardo, Pietro; Piccardi, Paolo; and Longoni, Angelo, 4,460,606, Cl. 424-341.000.

Picciola, Giampaolo; Ravenna, Franco; and Riva, Mario, to Maggioni Farmaceutici, S.p.A. Dipeptides having a methionine residue and possessing a protective action for the liver. 4,460,601, Cl. 424-300.000.

Pierre Fabre S.A.: *See—*
d'Hinterland, Lucien D.; Normier, Geard; Pinel, Anne-Marie; and Durand, Jacques, 4,460,575, Cl. 424-92.000.
Ducros, Luc; Navarro, Roger; and Kaeser, Charles, 4,460,109, Cl. 222-94.000.

Pinel, Anne-Marie: *See—*
d'Hinterland, Lucien D.; Normier, Geard; Pinel, Anne-Marie; and Durand, Jacques, 4,460,575, Cl. 424-92.000.

Pioneer Electronic Corporation: *See—*
Mizumoto, Katsuji, 4,460,856, Cl. 318-254.000.

Pioneer Video Corporation: *See—*
Nakamuta, Shozo, 4,460,926, Cl. 358-325.000.

Piper, Douglas E., to Woven Electronics Corporation. Unitary woven jacket and electrical transmission cable and method of making same. 4,460,803, Cl. 174-36.000.

Pirkle, Fred L. Valve mechanism. 4,460,007, Cl. 137-79.000.

Pitman, Raymond F.; and Bornowski, Robert M., to RO Corporation. Longitudinally bowed transversely polygonal boom for cranes and the like. 4,459,786, Cl. 52-115.000.

Pittway Corporation: *See—*
Conforti, Frederick J., 4,460,863, Cl. 320-59.000.

Pizon, Veronique; and Farcot, Jean-Christian. Coronary sinus retroperfusion apparatus for the treatment of myocardial ischemia. 4,459,977, Cl. 128-1.00D.

Pizzuti, Donato F.; and Stamps, Narvous, Jr., to Polaroid Corporation. Electronic flash with flashtube retention strap. 4,460,942, Cl. 362-217.000.

Plunkett, Francis P., to Carrier Corporation. Diffuser throttle ring control. 4,460,310, Cl. 415-26.000.

Plyhm, Into, to Marenko Oy. Device for exercising the muscles determining body posture. 4,460,171, Cl. 272-94.000.

Pokladnik, Roger L., to Armco Inc. Laterally releasable connector between outer well member and template. 4,460,047, Cl. 166-341.000.

Polaroid Corporation: *See—*
Pizzuti, Donato F.; and Stamps, Narvous, Jr., 4,460,942, Cl. 362-217.000.

Pomeroy, Johana: *See—*
Pomeroy, William B., 4,460,211, Cl. 294-99.00R.

Pomeroy, William B., to Pomeroy, William B.; and Pomeroy, Johana. Gem holder. 4,460,211, Cl. 294-99.00R.

Porter, Luther T., to Chevron Research Company. Advancing heated annulus steam drive. 4,460,044, Cl. 166-252.000.

Portlock, David E., to Norwich Eaton Pharmaceuticals, Inc. 2-(3-Mercapto-1-oxopropyl)-1,2,3,4-tetrahydroisoquinoline-1-carboxylic acid derivatives. 4,460,775, Cl. 546-147.000.

Portolese, Larry A.: *See—*
Cybulski, Mark J.; and Portolese, Larry A., 4,460,068, Cl. 188-71.800.

Post, Sieghard; and Mehl, Siegfried, to U.S. Philips Corporation. Transformer comprising a magnetic screen. 4,460,884, Cl. 336-73.000.

Poulsen, Finn; Samuelsen, Peter; and Johannesson, Niels O., to Coloplast A/S. Filter for ostomy bags. 4,460,392, Cl. 55-385.00C.

Power Group International Corp.: *See—*
Gottfried, Carlos F., 4,460,834, Cl. 307-64.000.

Power, Roy J., to Power-Soler, Inc. Heel-counter stabilizer. 4,459,765, Cl. 36-88.000.

Power-Soler, Inc.: *See—*
Power, Roy J., 4,459,765, Cl. 36-88.000.

PPG Industries, Inc.: *See—*
Davis, Richard A., 4,460,086, Cl. 206-389.000.
Kapura, Edward M.; and Goode, Henry C., 4,460,397, Cl. 65-99.500.

Price, Kenneth E.; and Schuman, Michael L. Flowmeter. 4,459,859, Cl. 73-861.540.

Prince Corporation: *See—*
Van Appledorn, William, 4,460,324, Cl. 425-166.000.

Pringle, Ronald E., to Camco, Incorporated. Control fluid communication nipple. 4,460,046, Cl. 166-317.000.

Priniski, David J., to Motorola Inc. Radio with audio graphic equalizer. 4,461,026, Cl. 381-98.000.

Pritchard Corporation, The: *See—*
Nobles, John E.; and Swenson, Leonard K., 4,460,395, Cl. 62-18.000.

Probst, Karl; Hufken, Kurt; and Goricanec, Zvonko, to Lindemann Maschinenfabrik GmbH. Apparatus for binding bales in a baling press. 4,459,904, Cl. 100-11.000.

Procter & Gamble Company, The: *See—*
Buckwalter, Brian L.; and LaHann, Thomas R., 4,460,602, Cl. 424-322.000.

Programmed Marketing, Inc.: *See—*
Newton, Kenneth C.; Wallace, Robert P.; and Ohnell, Ernst, 4,460,233, Cl. 339-122.00R.

Prop, Gerrit: *See—*
Lautenschlager, Hans-Heiner; Welter, Andre; Hilboll, Gerd; Winkelmann, Johannes; Prop, Gerrit; Brekle, Axel; and Zierenberg, Ottfried, 4,460,598, Cl. 424-273.00R.

Pryor, Timothy R., to Diffracto Ltd. Fiber optic based robot controls. 4,460,826, Cl. 250-227.000.

Pugin, Andre: *See—*
Iqbal, Abul; Lienhard, Paul; and Pugin, Andre, 4,460,768, Cl. 548-105.000.

Puletti, Paul P.: *See—*
Schmidt, Robert C., Jr.; Decowski, Stanley J., Jr.; and Puletti, Paul P., 4,460,728, Cl. 524-271.000.

Purex Corporation: *See—*
Robinson, Ronald A.; Graf, Wendie T.; and Evans, George D., III, 4,460,487, Cl. 252-8.800.

Purex Pool Products, Inc.: *See—*
Gordbegli, Manochehr; and Mendoza, Joe, 4,460,944, Cl. 362-276.000.

Purtec Systems, Inc.: *See—*
Shafer, Ronald E., 4,460,554, Cl. 423-223.000.

Pytlewski, Louis L.; Krevitz, Kenneth; and Smith, Arthur B., to Franklin Institute, The. Method for decomposition of halogenated organic compounds. 4,460,797, Cl. 568-715.000.

Quaker Industries, Inc.: *See—*
Cwik, Norbert L., 4,459,920, Cl. 108-107.000.

Quanticon Inc.: *See—*
Lippel, Bernard, 4,460,924, Cl. 358-310.000.

Quinn, James A., to Singer Company, The. Gyroscope wheel dynamic braking and sequence inhibit circuit. 4,460,853, Cl. 318-86.000.

Rabe, David L.: *See*—
Penfold, Garn F.; and Rabe, David L., 4,459,798, Cl. 56-341.000.

Radiant Technology Corporation: *See*—
Crain, N. Robert; and Hardison, Robert P., 4,460,821, Cl. 219-388.000.

Rado, Theodore A., to Kerr-McGee Chemical Corporation. Process for production of titanium dioxide from titaniferrous ore. 4,460,550, Cl. 423-79.000.

Raggiotti, Guglielmo, to Interstudio Design s.a.s. Portable reading desk. 4,460,146, Cl. 248-456.000.

Ragland, Frank R., Jr., to RCA Corporation. Color picture tube having improved temperature compensating support for a mask-frame assembly. 4,460,843, Cl. 313-406.000.

Rains, Randall C.: *See*—
Hoffman, Dwight K.; Harris, Robert F.; Tefertiller, Nancy B.; and Rains, Randall C., 4,460,715, Cl. 521-137.000.

Ralph A. Hiller Company: *See*—
Nanci, James R.; and MacGregor, James, 4,460,009, Cl. 137-243.600.

Ralston Purina Company: *See*—
Yang, Angel A.; and Vander Zanden, Robert J., 4,460,613, Cl. 426-601.000.

Rama, Lord; and Eccles, David, to Alvex Development Corp. Cover for drink containers. 4,460,103, Cl. 220-254.000.

Ramazzotti, Dario J.; and Cohen, Sherman E., to Nordson Corporation. Hose support. 4,460,140, Cl. 248-75.000.

Ransom, Dean A.: *See*—
Weilbacher, Eugene E.; and Ransom, Dean A., 4,460,354, Cl. 604-73.000.

Rapisarda, Anthony A.; and Romeo, Joseph, to Lever Brothers Company. Polyester fabric conditioning and whitening composition. 4,460,485, Cl. 252-8.750.

Rapp, Willard E., to AT&T Technologies, Inc. Wire insulation softening device. 4,460,327, Cl. 425-446.000.

Rasmussen, Robert F.; Smida, George R.; Wietecha, Robert L.; and Pearson, Gary L., to Air-Mo Hydraulics, Inc. Hydraulic chuck with improved seal. 4,460,200, Cl. 285-18.000.

Rathkamp, Hermann: *See*—
Jurgens: Rainer; and Rathkamp, Hermann, 4,460,053, Cl. 175-329.000.

Ratledge, R. Houston: *See*—
Durant, John A.; and Ratledge, R. Houston, 4,460,307, Cl. 414-525.00R.

Ratte, Robert W., to Water Gremlin Company. Weedless sinker. 4,459,775, Cl. 43-44.890.

Raudat, John L., to Standard-Knapp, Inc. Accelerated loading for case packer. 4,459,794, Cl. 53-497.000.

Rauer, Kurt, to Luperox GmbH. Process for crosslinking and, if desired, foaming natural or synthetic homo- and/or copolymers. 4,460,748, Cl. 525-256.000.

Rauser, Jan A. I.; and Knudsen, Gunnar, to Tetra Pak International A.B. Method for the manufacture of a packing material with good gas-tightness properties. 4,460,425, Cl. 156-244.230.

Ravenna, Franco: *See*—
Picciola, Giampaolo; Ravenna, Franco; and Riva, Mario, 4,460,601, Cl. 424-300.000.

Ray, Kenneth I., to Motorola, Inc. Voltage reference circuit. 4,460,864, Cl. 323-313.000.

Raynes, Edward P.: *See*—
Hilsum, Cyril; and Raynes, Edward P., 4,460,247, Cl. 350-331.00T.

Raynor, Paul A.: *See*—
Barford, Eric D.; Jeffrey, Daniel J.; and Raynor, Paul A., 4,460,490, Cl. 252-92.000.

RCA Corporation: *See*—
Brackelmanns, Norbert W.; and Hulstrunk, William, 4,460,913, Cl. 357-34.000.
Brown, Martin K.; and Richard, Kenny S., 4,460,845, Cl. 313-417.000.
Christopher, Lauren A.; Reitmeier, Glenn A.; Smith, Terrence R.; and Strolle, Christopher H., 4,460,958, Cl. 364-200.000.
Connolly, John C.; and Botez, Dan, 4,461,008, Cl. 372-45.000.
Hoffman, Barry L., 4,460,208, Cl. 294-65.000.
Hudson, Kenneth C., 4,460,240, Cl. 350-6.800.
Kujas, Erich F., 4,460,660, Cl. 429-40.000.
Maa, Jer-shen, 4,460,435, Cl. 156-643.000.
McNeely, Michael L., 4,460,656, Cl. 428-542.800.
Michaelis, Theodore D., 4,460,857, Cl. 318-375.000.
Pearlman, Samuel, 4,460,621, Cl. 427-64.000.
Ragland, Frank R., Jr., 4,460,843, Cl. 313-406.000.
Schmitt, Edward T.; Ronan, Harold R., Jr.; and Schuler, Malcolm R., 4,460,868, Cl. 324-158.00F.

Redinger, Robert; and Berngruber, Walter, to Hoechst Aktiengesellschaft. Process for the mass polymerization of vinyl chloride. 4,460,754, Cl. 526-75.000.

Rees, Herbert: *See*—
Boehm, Russell W.; Keelen, William R.; and Rees, Herbert, 4,460,534, Cl. 264-246.000.

Reffert, Rudi W.; Hambrecht, Juergen; Echte, Adolf; Schuster, Hans H.; and Dreher, Hermann, to BASF Aktiengesellschaft. Removal of the catalyst from polyphenylene ethers. 4,460,764, Cl. 528-487.000.

Rehrer, David H., to Exxon Research & Engineering Co. Water shedding agents in distillate fuel oils. 4,460,380, Cl. 44-62.000.

Reichard, John G.: *See*—
Inkmann, Mark S.; Karolek, Neil C.; Reichard, John G.; and Inkmann, Donald A., 4,460,054, Cl. 177-149.000.

Reid, John H. Flow-control process for an oxidation ditch. 4,460,471, Cl. 210-629.000.

Reid, Lloyd E.: *See*—
Gudelis, David A.; and Reid, Lloyd E., 4,460,453, Cl. 208-33.000.

Reimann, Hans, to Linde Aktiengesellschaft. Process and apparatus for the biological purification of phosphate-containing wastewater. 4,460,470, Cl. 210-605.000.

Reinehr, Dieter; and Pfeifer, Josef, to Ciba-Geigy Corporation. Substituted 1,11-diaminoundecanes, processes for producing them, and their use. 4,460,790, Cl. 564-511.000.

Reinert, Gerard E.: *See*—
Carter, Russell P., Jr.; Lim, In C.; and Reinert, Gerard E., 4,460,733, Cl. 524-493.000.

Reitmeier, Glenn A.: *See*—
Christopher, Lauren A.; Reitmeier, Glenn A.; Smith, Terrence R.; and Strolle, Christopher H., 4,460,958, Cl. 364-200.000.

Rekers, John W., to Milliken Research Corporation. Radiation-stable polyolefin compositions containing benzaldehyde acetals. 4,460,445, Cl. 204-159.200.

Rembaum, Alan: *See*—
Tokes, Zoltan A.; Rogers, Kathryn E.; and Rembaum, Alan, 4,460,560, Cl. 424-1.100.

Remers, William A., to University Patents, Inc. Mitomycin analogs. 4,460,599, Cl. 424-274.000.

Remus, Hans-Jurgen; and Antognini, Luciano, to Asulab S.A. Stepping motor assembly. 4,460,859, Cl. 318-696.000.

Renfroe, Harris B., to Ciba-Geigy Corporation. N-Substituted-2-pyridylindoles. 4,460,777, Cl. 546-273.000.

Rengger, Ralph E.; and Manning, David R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Input device for computer speech recognition system. 4,461,024, Cl. 381-46.000.

Renth, Ernst-Otto: *See*—
Schromm, Kurt; Mestrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, 4,460,581, Cl. 424-244.000.

Repro Master Electronic S.r.L.: *See*—
Parrini, Carlo G., 4,460,272, Cl. 355-91.000.

Research Corporation: *See*—
Carpino, Louis A.; and Segev, David, 4,460,501, Cl. 260-112.00R.

Reynolds Metals Company: *See*—
Singleton, Ogle R.; and Edwards, H. Marvin, 4,460,541, Cl. 419-42.000.

Reynolds Products Inc.: *See*—
Krueger, Harvey R., 4,459,824, Cl. 62-347.000.

Rhodes, Duane C. Golf bag cooler kit. 4,459,827, Cl. 62-457.000.

Rhone-Poulenc Agrochimie: *See*—
Holm, Robert E., 4,460,402, Cl. 71-98.000.

Rhone-Poulenc Industries: *See*—
Morel, Didier, 4,460,786, Cl. 560-126.000.
Morel, Didier, 4,460,801, Cl. 568-840.000.

Rhythm Watch Co., Ltd.: *See*—
Tomonori, Sano, 4,460,280, Cl. 368-74.000.

Rialland, Jean P.; and Barbier, Jean P., to Laiteries E. Bridel. Acidulated decationized milk. 4,460,616, Cl. 426-580.000.

Ricci, Albert A., to Bristol-Myers Company. Shelf organizer. 4,460,096, Cl. 211-184.000.

Richard, Armand C.; Gayton, Michael A.; and D'Ambra, Anthony F., to Leach & Garner Company. Rigified earring post. 4,459,829, Cl. 63-12.000.

Richard, Kenny S.: *See*—
Brown, Martin K.; and Richard, Kenny S., 4,460,845, Cl. 313-417.000.

Richards, Randall G.: *See*—
Keyes, George B.; and Richards, Randall G., 4,459,710, Cl. 4-228.000.

Richardson, Murl R. Single acting reciprocating pump piston. 4,459,899, Cl. 92-159.000.

Richardson, Paul; and Whitley, David A., to Santa Fe International Corporation. Mine shaft liner. 4,460,293, Cl. 405-133.000.

Richardson, Paul C. A.; and Stevens, Andrew L., to National Research Development Corporation. Ultrasonic transducer coupling member. 4,459,854, Cl. 73-644.000.

Richardson, Theodore A.: *See*—
Alden, Lorne B.; and Richardson, Theodore A., 4,460,822, Cl. 219-401.000.

Ricks, Walter G.: *See*—
Hurley, Byron H.; and Ricks, Walter G., 4,460,026, Cl. 141-1.000.

Ricoh Company, Ltd.: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, 4,460,256, Cl. 354-173.110.
Kunikane, Makoto; Abe, Michiharu; and Umehara, Masaakira, 4,460,665, Cl. 428-199.000.

Rieder, Heinz; and Schwaiger, Max. Hand-held measuring implement. 4,459,749, Cl. 33-125.00C.

Riegel, Klaus: *See*—
Beyreuther, Christian; and Riegel, Klaus, 4,459,983, Cl. 128-205.240.

Rigamonti, Alessandro: *See*—
Moro, Luigi; Neri, Guido; and Rigamonti, Alessandro, 4,460,577, Cl. 424-180.000.

Risinger, Vance, to Texas Instruments Incorporated. Electronic rectifier/multiplier/level shifter. 4,460,952, Cl. 363-61.000.

Ritchie, Alistair J. F.: *See*—
Adey, Anthony J.; Ritchie, Alistair J. F.; and Wigglesworth, Michael J., 4,459,955, Cl. 123-357.000.

Ritchie, Duncan; Mills, John R.; and Couper, William R. D., to Associated Lead Manufacturers Ltd. Method of removing dross from a lead refining pot. 4,460,166, Cl. 266-228.000.

RIV-SKF Officine di Villar Perosa S.p.A.: *See—*
Colanzi, Franco; and Vignotto, Angelo, 4,460,184, Cl. 277-35.000.

Riva, Mario: *See—*
Picciola, Giampaolo; Ravenna, Franco; and Riva, Mario, 4,460,601, Cl. 424-300.000.

RO Corporation: *See—*
Pitman, Raymond F.; and Bornowski, Robert M., 4,459,786, Cl. 52-115.000.

Robb, Wendell E. Four-way valve. 4,460,017, Cl. 137-625.430.

Robert Bosch GmbH: *See—*
Eheim, Franz, 4,459,957, Cl. 123-387.000.
Gross, Werner; and Straubel, Max, 4,459,963, Cl. 123-506.000.
Leiber, Heinz; Roller, Dieter; and Braschel, Volker, 4,460,963, Cl. 364-426.000.
Straubel, Max; and Stumpp, Gerhard, 4,459,964, Cl. 123-569.000.

Roberts, Alan K.: *See—*
Esnard, Miguel H., 4,459,744, Cl. 30-49.000.

Roberts-Gordon Appliance Corp.: *See—*
Beverly, John P., 4,460,123, Cl. 236-46.00R.

Robertshaw Controls Company: *See—*
Barker, Charles E.; Cairo, Anthony C.; and Bauer, Frederick T., 4,460,125, Cl. 236-94.000.

Robin, Seymour; and Klein, Yosef, to Sensor Systems, Inc. Laterally isolated microstrip antenna. 4,460,894, Cl. 343-700.0MS.

Robins, Janis, to Minnesota Mining & Manufacturing Company. Adhesive compositions and bonding methods employing the same. 4,460,759, Cl. 526-298.000.

Robinson, Ronald A.; Graf, Wendie T.; and Evans, George D., III, to Purex Corporation. Rinse cycle fabric softener with bleach. 4,460,487, Cl. 252-8.800.

Robson, John; and Carthew, Maximilian K., to Haden Schweitzer Corporation. Fume incineration for paint drying oven. 4,460,331, Cl. 432-72.000.

Roca-Nierga, Manuel; Branchetti, Italo; and Forapianti, Mauro, to SPICA S.p.A. Governor for fuel injection pumps. 4,459,956, Cl. 123-373.000.

Rockwell International Corporation: *See—*
Brissette, Ronald N., 4,460,182, Cl. 277-12.000.
Brissette, Ronald N., 4,460,183, Cl. 277-12.000.
Cole, Carey S.; and Noble, William B., 4,460,244, Cl. 350-112.000.
Jones, Addison B., 4,459,937, Cl. 118-50.100.

Rodger, Edward F., to C. A. Rubio Company, The. Washing apparatus for tubular members. 4,460,005, Cl. 134-104.000.

Rogers, Garry W. C. Front end steering assembly for carts and the like. 4,460,197, Cl. 280-771.000.

Rogers, Kathryn E.: *See—*
Tokes, Zoltan A.; Rogers, Kathryn E.; and Rembaum, Alan, 4,460,560, Cl. 424-1.100.

Rogers, William O., to Motorola, Inc. Molded-in isolation bushing for semiconductor devices. 4,460,917, Cl. 357-81.000.

Rohde, Frederick W.: *See—*
Chen, Pi-Fuay; Rohde, Frederick W.; and Seemuller, William W., 4,460,969, Cl. 364-727.000.

Rohm GmbH Chemische Fabrik: *See—*
Elser, Wilhelm; and Munzer, Manfred, 4,460,721, Cl. 524-35.000.

Rohm and Haas Company: *See—*
Emmons, William D.; and Lavelle, Joseph A., 4,460,625, Cl. 427-136.000.
Owens, Joseph M.; and O'Farrell, Charles E., 4,460,734, Cl. 524-376.000.

Roller, Dieter: *See—*
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Rollmann, Kent W., to Phillips Petroleum Company. Asphalt compositions. 4,460,723, Cl. 524-70.000.

Rolls-Royce Limited: *See—*
Fuller, John R. D., deceased, 4,460,314, Cl. 416-145.000.

Romann, Annick: *See—*
Graciet, Michel; Romann, Annick; and Buchy, Francois, 4,460,624, Cl. 427-102.000.

Romeas, Rene, to Thomson-Brandt. Optical reading device for reading an information carrier with motion effect facilities. 4,460,927, Cl. 358-342.000.

Romeo, Joseph: *See—*
Rapisarda, Anthony A.; and Romeo, Joseph, 4,460,485, Cl. 252-8.750.

Ronan, Harold R., Jr.: *See—*
Schmitt, Edward T.; Ronan, Harold R., Jr.; and Schuler, Malcolm R., 4,460,868, Cl. 324-158.00F.

Rope, Eugene L.: *See—*
Tricoles, Gus P.; and Rope, Eugene L., 4,460,901, Cl. 343-872.000.

Rosa, John, to Westinghouse Electric Corp. Control system for machine commutated inverter-synchronous motor drives. 4,460,861, Cl. 318-722.000.

Rose, June S.: *See—*
Kessler, Ronald N.; Rose, June S.; and Ullman, Myron E., Jr., 4,460,095, Cl. 211-69.100.

Rosemount Inc.: *See—*
Murray, Jean P.; Bohn, David C.; and Bengtson, Darroll D., 4,459,857, Cl. 73-861.120.

Rosenbaum, Georges: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,460,488, Cl. 252-89.100.

Rosenbaum, Ralph L. Multiple-chamber cooling device particularly useful in a dilution refrigerator. 4,459,828, Cl. 62-514.00R.

Rosenberg, Arnold M.: *See—*
Gaidis, James M.; and Rosenberg, Arnold M., 4,460,720, Cl. 524-5.000.

Rossman, Rudolf: *See—*
Mariaux, Jacques; and Rossman, Rudolf, 4,459,725, Cl. 29-1.200.

Rothmans of Pall Mall Canada Limited: *See—*
Brackmann, Warren A.; and Hrboticky, Karel, 4,459,999, Cl. 131-109.00R.

Roxlo, Charles B.: *See—*
Salour, Michael M.; and Roxlo, Charles B., 4,461,006, Cl. 372-35.000.

Royer, George R. Solar panel construction for buildings. 4,459,973, Cl. 126-431.000.

RPM, Inc.: *See—*
Evans, Robert M.; and Leonard, Thomas M., 4,460,737, Cl. 524-584.000.

Rua, Louis, Jr.: *See—*
Frentzel, Richard L.; Rua, Louis, Jr.; and Pacheco, Anne L., 4,460,738, Cl. 524-591.000.

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Cox, Robert W.; Janikowski, Herbert E.; Walker, David L.; and Hands, David, 4,460,533, Cl. 264-236.000.

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Rusk, Richard W. Torch guiding system for flame cutting of pipe. 4,460,162, Cl. 266-56.000.

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Jarosz, John M.; and Panas, William R., 4,460,886, Cl. 337-148.000.

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Kopp, Walter; and Saalmuller, Karl-Heinz, 4,460,266, Cl. 355-3.0DD.

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Morner, Bengt O. J. S.; and Thomsen, Peter, 4,460,072, Cl. 188-77.00R.

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Saget, Pierre. Apparatus for centrifugal separation of a mixture containing at least one gaseous phase. 4,460,393, Cl. 55-406.000.

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Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,460,774, Cl. 544-366.000.

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Sakoda, Tom K.: *See*—
Jaworski, Eugene; Breslow, Jeffrey D.; Sakoda, Tom K.; and Disko, Harry, 4,459,776, Cl. 446-462.000.
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Shoji, Yukito, 4,460,727, Cl. 524-215.000.
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Krieger, Friedrich, 4,460,536, Cl. 376-268.000.
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Sanders, Johan P. M.; and Docherty, Andrew J. P., to Gist Brocades NV. Plasmid and its use. 4,460,688, Cl. 435-172.300.
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Sandlin, Jane M.; and Sandlin, William C., 4,459,773, Cl. 40-155.000.
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Casciani, Robert V., 4,460,789, Cl. 564-504.000.
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Berthold, Richard, 4,460,586, Cl. 424-250.000.
Sankrithi, Mithra M. K. V. Flexible flap for an airfoil. 4,460,138, Cl. 244-215.000.
Sankyo Company Limited: *See*—
Naito, Atsushi; Nakagawa, Fumio; Okazaki, Takao; Terahara, Akira; Iwado, Seigo; and Yamazaki, Mitsuo, 4,460,765, Cl. 536-26.000.
Yanai, Toshiaki; Jojima, Teruomi; Kawakubo, Katsuhiko; Honma, Toyokuni; and Shindo, Masahiro, 4,460,597, Cl. 424-273.00P.
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Sansone, Michael J.: *See*—
Sapienza, Richard S.; Sansone, Michael J.; and Slegeir, William A. R., 4,460,710, Cl. 518-700.000.
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Richardson, Paul; and Whitley, David A., 4,460,293, Cl. 405-133.000.
Sanyo Electric Co., Ltd.: *See*—
Nanko, Hideaki, 4,461,002, Cl. 371-47.000.
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Sargent, Frank R. Mechanical power conversion and transmission systems. 4,459,868, Cl. 74-191.000.
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Sarstedt, Walter, to Walter Sarstedt Kunststoff-Spritzgusswerk. Blood extracting and centrifuging device. 4,459,997, Cl. 128-764.000.
Sartain, Donald W.; Paxton, Lee C.; and Kastl, Melvin R., to Sartain, Donald W. Swimming pool cover assembly. 4,459,711, Cl. 4-502.000.
Sasaki, Noriaki, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Freeze valve having multiple heating-cooling means. 4,460,398, Cl. 65-327.000.
Sasaki, Tadajiro. Balancer. 4,460,148, Cl. 248-585.000.
Sasase, Naoshi; Inagaki, Nobukatsu; Hayashi, Yoshihiro; and Nishimura, Yuji, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai-Tika-Denki-Seisakusho. Passive seatbelt system. 4,460,198, Cl. 280-804.000.
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Sato, Akihiro; Tachibana, Masami; Uwai, Toshihiro; Matsuda, Kenji; and Higuchi, Yoshiharu, to Chisso Corporation. Process for producing α-olefin polymers. 4,460,757, Cl. 526-114.000.
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Sauers, Richard F., to Du Pont de Nemours, E. I., and Company. Benzenesulfonamides as herbicides. 4,460,401, Cl. 71-92.000.
Savin Corporation: *See*—
Landa, Benzion, 4,460,286, Cl. 400-118.000.
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Savrda, Jaroslav; and David, Hugo, to Institut Pasteur. Tuberculine active peptides and a process for preparing same by chemical synthesis. 4,460,503, Cl. 260-112.50R.
Sawdon, Edwin G., to BTM Corporation. Joining sheet metal. 4,459,735, Cl. 29-509.000.
Saxer, Albert J., to Otis Elevator Company. Rope sway warning device for compensating ropes in elevator systems. 4,460,065, Cl. 187-29.00R.
Saxer, Albert J.: *See*—
Yasuda, Kentaro; Saxer, Albert J.; and Cilderman, Janis J., 4,459,754, Cl. 33-137.00R.
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Tivelius, Bertil G., 4,460,164, Cl. 266-158.000.
Scanlon, John M.; and Slana, Matthew F., to AT&T Bell Laboratories. Loop communication system. 4,460,994, Cl. 370-88.000.
Schadt, Frank L., III, to Du Pont de Nemours, E. I., and Company. Low coating weight silver halide element. 4,460,679, Cl. 430-409.000.
Schadt, Martin: *See*—
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Schaeper, Gary R.; and Olson, Richard A., to NL Industries, Inc. Annular blowout preventer with upper and lower spherical sealing surfaces. 4,460,149, Cl. 251-1.00B.
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Turlak, Robert J.; Williams, Bolie C., III; and Schaeper, Gary R., 4,460,150, Cl. 251-1.00B.
Schaetzle, Walter J. Thermal energy compression system for heat pumps. 4,459,814, Cl. 62-175.000.
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Abel, Heinz; Becker, Carl; and Schafer, Paul, 4,460,374, Cl. 8-501.000.
Schaff, Alfred J. Multidirectional linking system for use in constructions. 4,460,288, Cl. 403-27.000.
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Baum, Jorg P.; and Schaffer, Theodor, 4,460,389, Cl. 55-273.000.
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Fock, Jurgen; Schedlitzki, Dietmar; and Wacker, Holger, 4,460,746, Cl. 525-117.000.
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Schwabe, Ulrich; Jacobs, Erwin; and Scheibe, Adolf, 4,459,740, Cl. 29-576.00B.
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Gessel, James M.; Kunz, Gary L.; and Scheidenhelm, E. Louis, 4,459,797, Cl. 56-220.000.
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Scherman, Terrance C. Pendant control system for pendant supported boom. 4,460,098, Cl. 212-187.000.
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Sommer, Karl; Schneider, Manfred; and Schickfluss, Rudolf, 4,460,375, Cl. 8-526.000.
Schievelbein, Vernon H., to Texaco Inc. Surfactant waterflooding enhanced oil recovery process. 4,460,481, Cl. 253-8.55D.
Schiller, August; and Dorsch, Norman, to Wacker-Chemie GmbH. Organopolysiloxane compositions which are stable under anhydrous conditions and elastomers formed therefrom. 4,460,761, Cl. 528-18.000.
Schiminski, Herbert: *See*—
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Brown, Vincent B.; and Schlacks, Robert F., 4,460,223, Cl. 339-14.00R.
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Lauterbach, Jerre F.; and Schlamadinger, Hans J., 4,460,284, Cl. 384-126.000.

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Ganshirt, Karlheinz; Walker, Wolfram H.; and Schleussner, Hans, 4,460,365, Cl. 604-408.000.

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Gloger, Manfred; Heinle, Josef; and Schlumberger, Helmut, 4,460,683, Cl. 435-10.000.

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O'Brien, Robert D.; and Schmecker, Elizabeth C., 4,459,726, Cl. 29-116.0AD.

Schmidt, John D., to Pacific Western Systems, Inc. Memory tester having memory repair analysis under pattern generator control. 4,460,999, Cl. 371-21.000.

Schmidt, Paul. Pipe driving attachment. 4,460,050, Cl. 173-128.000.

Schmidt, Peter; and Kulka, Siegfried, to Metalltechnik Schmidt GmbH & Co. Shield for improving the decoupling of antennas. 4,460,899, Cl. 343-841.000.

Schmidt, Reinhard: *See—*
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Schmidt, Robert C., Jr.; Decowski, Stanley J., Jr.; and Puletti, Paul P., to National Starch and Chemical Corporation. Hot melt adhesive compositions. 4,460,728, Cl. 524-271.000.

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Schmukler, Seymour: *See—*
Adur, Ashok M.; Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,460,632, Cl. 428-35.000.
Adur, Ashok M.; Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,460,745, Cl. 525-74.000.

Schneider, Fred J.: *See—*
Booth, Raymond H.; Monahan, Jack J.; and Schneider, Fred J., 4,460,421, Cl. 156-64.000.

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Sommer, Karl; Schneider, Manfred; and Schickfluss, Rudolf, 4,460,375, Cl. 8-526.000.

Schoen, Edmund R. Article holding device. 4,460,094, Cl. 211-35.000.

Scholle, William J.; and Lloyd-Davies, William. Filling valve assembly with fiber shearing edge. 4,460,025, Cl. 141-1.000.

Scholz, Thomas H.: *See—*
Campbell, Henry F.; Scholz, Thomas H.; and Douglas, George H., 4,460,585, Cl. 424-249.000.

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Fenter, William S.; and Schott, Arthur E., 4,460,951, Cl. 363-49.000.

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Janssen, Lutz J.; and Schrader, Helmuth, 4,460,213, Cl. 296-1.00S.

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Cobb, William R.; and Wehner, Dennis J., 4,460,294, Cl. 405-290.000.

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Schuler, Malcolm R.: *See—*
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Schulte-Elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., to Firmenich S.A. Process for the preparation of delta- and epsilon-damascones. 4,460,792, Cl. 568-341.000.

Schultze, Werner; and Weber, Knut, Jr., to Vereinigte Aluminium-Werke Aktiengesellschaft; and Langlet Weber KG. Process for manufacturing a ceramic hollow body. 4,460,529, Cl. 264-81.000.

Schulz, Helmuth; and Bacher, Helmut, to Oesterreichische Schiffswerften Aktiengesellschaft. Apparatus for processing synthetic thermoplastic material. 4,460,277, Cl. 366-76.000.

Schulze, Friedrich-Wilhelm: *See—*
Aulich, Hubert; Eisenrith, Karl-Heinz; Schulze, Friedrich-Wilhelm; and Urbach, Hans-Peter, 4,460,556, Cl. 423-350.000.

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Price, Kenneth E.; and Schuman, Michael L., 4,459,859, Cl. 73-861.540.

Schumann, Hans-Joachim; and Faust, Manfred, to Agfa-Gevaert Aktiengesellschaft. Process for the luminescense-spectroscopic examination of coatings and coating profiles. 4,460,274, Cl. 356-318.000.

Schundehutte, Karl H.; and Henk, Hermann, to Bayer Aktiengesellschaft. Dyestuffs, processes for their preparation and their use for dyeing materials containing hydroxyl groups or nitrogen. 4,460,505, Cl. 260-153.000.

Schuss, Werner: *See—*
Landgraf, Hermann; Schuss, Werner; and Worschischek, Rainer, 4,460,337, Cl. 433-29.000.

Schuster, Hans H.: *See—*
Reffert, Rudi W.; Hambrecht, Juergen; Echte, Adolf; Schuster, Hans H.; and Dreher, Hermann, 4,460,764, Cl. 528-487.000.

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Weiger, Gunter; Schwerdt, Paul; and Hirn, Helmut, 4,460,840, Cl. 310-328.000.

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Millauer, Hans; and Schwertfeger, Werner, 4,460,512, Cl. 260-458.00F.

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Scifres, Donald R.: *See—*
Burnham, Robert D.; Streifer, William; and Scifres, Donald R., 4,461,007, Cl. 372-45.000.

SCM Corporation: *See—*
Hwang, Jennie S., 4,460,414, Cl. 148-23.000.

Scott & Fetzer Company, The: *See—*
Nctestine, Richard H., 4,459,719, Cl. 15-349.000.

Sears, I. Weir; Hostetler, John E.; and Hulsebusch, William H., to Apparel Form Company. Method of forming cloth into three-dimensional shapes and the articles produced by that method. 4,459,704, Cl. 2-69.000.

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Beck, Michael S., 4,459,764, Cl. 36-72.00B.

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Chen, Pi-Fuay; Rohde, Frederick W.; and Seemuller, William W., 4,460,969, Cl. 364-727.000.

Segawa, Hirozo: *See—*
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Segev, David: *See—*
Carpino, Louis A.; and Segev, David, 4,460,501, Cl. 260-112.00R.

Sei, Kazuo: *See—*
Inoue, Hiroshi; Isoi, Masaaki; and Sei, Kazuo, 4,460,646, Cl. 428-344.000.

Seiko Instruments & Electronics Ltd.: *See—*
Koga, Toshiyuki; and Ishijima, Hiroshi, 4,461,017, Cl. 378-044.000.

Seiko Seiki Kabushiki Kaisha: *See—*
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Seki, Masayuki, to Nissin Kogyo Kabushiki Kaisha. Disc brake for vehicular use. 4,460,071, Cl. 188-73.390.

Seki, Shojiro, to Nissan Motor Company, Limited. Remote control door-lock device for an automotive vehicle. 4,459,834, Cl. 70-256.000.

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Nagasawa, Takashi; and Shimura, Junichi, 4,459,753, Cl. 33-137.00L.

Semco Instruments, Inc.: *See—*
Moore, M. Samuel; and Harootion, Aramais, 4,460,225, Cl. 339-28.000.

Senez, Alain: *See—*
Thiersault, Jean-Paul; Senez, Alain; and Vidal, Jean L., 4,460,750, Cl. 525-333.800.

Sensor Systems, Inc.: *See—*
Robin, Seymour; and Klein, Yosef, 4,460,894, Cl. 343-700.0MS.

Sepanik, Thomas E., to Ford Motor Company. Wheel cover retainer assembly. 4,460,219, Cl. 301-108.00R.

Serban, Alexander; Watson, Keith G.; Wilshire, Colin; and Forsyth, Bruce A., to ICI Australia Limited. 5-Substituted pyrimidine derivatives active against internal animal parasites. 4,460,588, Cl. 424-251.000.

Sergeant, Ronald G.: *See—*
Lane, David; and Sergeant, Ronald G., 4,460,228, Cl. 339-99.00R.

Settanni, Richard; and Avery, Ronald G., to Cerberus AG. Infrared intrusion detector with response indicator light. 4,460,829, Cl. 250-342.000.

Seymour, Donald E., to Smith & Nephew Research Ltd. Adhesive-coated sheet material incorporating anti-bacterial substances. 4,460,369, Cl. 604-897.000.

Shafer, Ronald E., to Purtec Systems, Inc. Method of removing H_2S from a gas stream utilizing boron-vanadium, quinone solution and iron scavaging composition. 4,460,554, Cl. 423-223.000.

Shakertown Corporation: *See—*
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Kanayama, Yoshio, 4,460,906, Cl. 346-140.00R.
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Shaw, Douglas R.; Spisak, John F.; Downey, Jerome P.; and Butts, Gary E., to Anschutz Mining Corporation. Sequential flotation of sulfide ores. 4,460,459, Cl. 209-9.000.

Shell Oil Company: *See*—
Eilers, Jacobus; and Stork, Willem H. J., 4,460,456, Cl. 208-89.000.
Hardesty, Donald E.; and Buchholz, Herbert F., 4,459,762, Cl. 34-9.000.
Shen, John C. S., to International Business Machines Corporation. Fixed abrasive grinding media. 4,459,779, Cl. 51-296.000.
Shen, Wei-Jiun: *See*—
Ko, Wen-Hsiung; Fung, Cliff D. J.; and Shen, Wei-Jiun, 4,459,856, Cl. 73-754.000.
Shepard, Howard M; Barkan, Edward D.; and Swartz, Jerome, to Symbol Technologies, Inc. Narrow bodied, single- and twin-windowed portable laser scanning head for reading bar code symbols. 4,460,120, Cl. 235-472.000.
Shepherd, Frank R.; and Westwood, William D., to Northern Telecom Limited. Thin film transistors. 4,459,739, Cl. 29-571.000.
Sherrill, John B. Warp stop motion with control bar. 4,460,022, Cl. 139-369.000.
Shibata, Fujio: *See*—
Azegami, Hitoshi; Kawahara, Hiroshi; and Shibata, Fujio, 4,460,653, Cl. 428-425.900.
Shibata, Ryoichi, to Kabushiki Kaisha Kuken. Impact wrench. 4,460,049, Cl. 173-93.500.
Shibata, Tadayoshi: *See*—
Hara, Yoshio; and Shibata, Tadayoshi, 4,460,254, Cl. 354-86.000.
Kozai, Katsuya; Fujita, Yoshihiro; Shibata, Tadayoshi; Kikuchi, Hisashi; Nakai, Hiroshi; and Ichii, Hirokazu, 4,460,255, Cl. 354-86.000.
Shibata, Toshihiro: *See*—
Leistner, William E.; Minagawa, Motonobu; Kubota, Naohiro; Shibata, Toshihiro; and Arata, Ryozo, 4,460,725, Cl. 524-102.000.
Shida, Mitsuzo: *See*—
Adur, Ashok M.; Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,460,632, Cl. 428-35.000.
Adur, Ashok M.; Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,460,745, Cl. 525-74.000.
Shigeta, Takashi: *See*—
Hirano, Yoshimi; and Shigeta, Takashi, 4,459,826, Cl. 62-430.000.
Shih, David H., to Merck & Co., Inc. Process for the preparation of thienamycin. 4,460,507, Cl. 260-245.20T.
Shimada, Junichi; Mitsuhashi, Yoshinobu; Kikuchi, Keisuke; and Sakurai, Kenjiro, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Optical memory playback apparatus. 4,460,977, Cl. 365-106.000.
Shimano Industrial Company Limited: *See*—
Shimano, Keizo, 4,459,871, Cl. 74-480.00R.
Shimano, Keizo, to Shimano Industrial Company Limited. Brake operating device for a bicycle including a supported cover. 4,459,871, Cl. 74-480.00R.
Shimazaki, Hiroshi: *See*—
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; and Shimazaki, Hiroshi, 4,460,526, Cl. 264-41.000.
Shimazaki, Kenzi: *See*—
Ogawa, Hiroyasu; Izumi, Kazuo; and Shimazaki, Kenzi, 4,460,650, Cl. 428-389.000.
Shimazaki, Masami: *See*—
Ohashi, Takehisa; Shimazaki, Masami; Nomura, Kenji; Nose, Yasushi; and Watanabe, Kiyoshi, 4,460,780, Cl. 548-201.000.
Shimizu, Key. Roller ski having a bridle. 4,460,187, Cl. 280-11.1BT.
Shimizu, Seiichi, to Canon Kabushiki Kaisha. Lens mounting. 4,460,245, Cl. 350-253.000.
Shimizu, Shigeo: *See*—
Koyama, Hiroaki; and Shimizu, Shigeo, 4,460,730, Cl. 524-403.000.
Shimura, Junichi: *See*—
Nagasawa, Takashi; and Shimura, Junichi, 4,459,753, Cl. 33-137.00L.
Shimura, Takaki: *See*—
Miwa, Hirohide; Hayashi, Hajime; and Shimura, Takaki, 4,459,853, Cl. 73-626.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Arai, Masatoshi, 4,460,740, Cl. 524-724.000.
Shindo, Masahiro: *See*—
Yanai, Toshiaki; Jojima, Teruomi; Kawakubo, Katsuhiko; Homma, Toyokuni; and Shindo, Masahiro, 4,460,597, Cl. 424-273.00P.
Shinno, Koji, to Terumo Corporation. Medical bag. 4,460,366, Cl. 604-408.000.
Shirai, Shigeru: *See*—
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,460,669, Cl. 430-57.000.
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,460,670, Cl. 430-57.000.
Shirai, Yoshihiro, to Sharp Kabushiki Kaisha. Two-layer guest-host liquid crystal display device. 4,460,248, Cl. 350-335.000.
Shitara, Masashi: *See*—
Nishikawa, Akio; Shitara, Masashi; Era, Susumu; Fukushima, Toshiaki; Suzuki, Hiroshi; and Kohkame, Hisashi, 4,460,783, Cl. 548-549.000.
Shmitka, Clarence F. Antenna with tunable helical resonator. 4,460,896, Cl. 343-750.000.
Shoji, Yukito, to Dainichiseika Color & Chemicals Mfg. Co., Ltd.; and Sakura Color Products Corp. Water base pigment ink composition for writing. 4,460,727, Cl. 524-215.000.
Shomura, Takashi: *See*—
Toyama, Hiromi; Nojiri, Chuhei; Shomura, Takashi; and Yamada, Yujiro, 4,460,693, Cl. 435-317.000.
Showa Seitai Kogyo Kaisha Ltd.: *See*—
Saito, Akio, 4,460,426, Cl. 156-277.000.
Siemens Aktiengesellschaft: *See*—
Aulich, Hubert; Eisenrith, Karl-Heinz; Schulze, Friedrich-Wilhelm; and Urbach, Hans-Peter, 4,460,556, Cl. 423-350.000.
Birkle, Siegfried; Stoger, Klaus; and Gehring, Johann, 4,460,447, Cl. 204-213.000.
Feuerbaum, Hans-Peter; and Knauer, Ulrich, 4,460,866, Cl. 324-57.0PS.
Hok, Bertil; and Ekstrom, Olof, 4,459,841, Cl. 73-4.00R.
Kopp, Walter; and Saalmuller, Karl-Heinz, 4,460,266, Cl. 355-3.0DD.
Kueenzle, Paul; and Voss, Karl-Heinz, 4,460,813, Cl. 200-146.00R.
Landgraf, Hermann; Schuss, Werner; and Worschischek, Rainer, 4,460,337, Cl. 433-29.000.
Michael, Ewald, 4,460,983, Cl. 365-189.000.
Schwabe, Ulrich; Jacobs, Erwin; and Scheibe, Adolf, 4,459,740, Cl. 29-576.00B.
Schwabe, Ulrich; and Jacobs, Erwin, 4,459,741, Cl. 29-576.00B.
Schwesig, Gunter; Vogt, Hartmut; Voss, Erich; and Zander, Hans-Hermann, 4,460,860, Cl. 318-721.000.
Slemeyer, Andreas, 4,459,994, Cl. 128-719.000.
Sierk, Anthony H. Can compactor. 4,459,908, Cl. 100-218.000.
Silinsky, Robert E., to Hughes Aircraft Company. Four element antenna turnstile tracking system. 4,460,898, Cl. 343-777.000.
Silvis, John E.; and Fant, William W., to NI Industries, Inc. Leaf spring end mounting structure. 4,460,167, Cl. 267-42.000.
Simonnot, Jack: *See*—
Jardinier, Pierre; and Simonnot, Jack, 4,460,122, Cl. 236-44.00A.
Simplex-GE (Holdings) Limited: *See*—
Ireland, Hugh C., 4,460,238, Cl. 339-255.00R.
Simpson, Howard D., to Union Oil Company of California. Hydroprocessing catalyst and method for preparing it. 4,460,707, Cl. 502-315.000.
Sinar AG Schaffhausen: *See*—
Gfeller, Karl; Koch, Carl; and Koch, Hans C., 4,460,263, Cl. 354-415.000.
Sinclair Research Limited: *See*—
Southward, David C., 4,460,908, Cl. 346-155.000.
Singer Company, The: *See*—
Jaffe, Wolfgang, 4,460,839, Cl. 310-154.000.
Kurland, Marvin; Oliva, Ferdinand P.; and Wilson, Terry L., 4,459,927, Cl. 112-237.000.
Quinn, James A., 4,460,853, Cl. 318-86.000.
Singleton, Ogle R.; and Edwards, H. Marvin, to Reynolds Metals Company. Aluminum powder metallurgy. 4,460,541, Cl. 419-42.000.
Sipos, Tibor, to Johnson & Johnson Products Inc. Anticaries compositions. 4,460,564, Cl. 424-52.000.
Sirotnak, Francis M.: *See*—
DeGraw, Joseph I.; Kelly, Lawrence F.; and Sirotnak, Francis M., 4,460,591, Cl. 424-251.000.
Sirvins, Andree : *See*—
Tellier, Jacques; Sirvins, Andree ; Gautier, Jean-Claude; and Tramier, Bernard, 4,460,692, Cl. 435-243.000.
Sirvio, Eero H.: *See*—
Korhonen, Antti S.; Sirvio, Eero H.; Sulonen, Martti S.; and Sundquist, Heikki A., 4,460,415, Cl. 148-16.600.
Sitt, Rudiger: *See*—
Kabbe, Hans-Joachim; Krause, Hans-Peter; and Sitt, Rudiger, 4,460,607, Cl. 424-248.500.
Sivertson, Wilford E., Jr. Keyless chuck gripping device. 4,460,296, Cl. 408-124.000.
Skerlos, Peter C., to Zenith Radio Corporation. CATV Service controller. 4,461,032, Cl. 455-4.000.
SKF Nova AB: *See*—
Lundgren, Bengt, 4,460,289, Cl. 403-314.000.
Skinner Engine Company: *See*—
Marchal, Francis V., 4,460,157, Cl. 251-315.000.
Skold, Ulf A. C., to Nordiska Ackumulatorfabriker Noack AB. Arrangement for sealing a storage battery casing. 4,460,661, Cl. 429-89.000.
Skulnick, Harvey I.: *See*—
Wierenga, Wendell; and Skulnick, Harvey I., 4,460,589, Cl. 424-251.000.
Skutecki, Edmund R.; Griffith, Carl D.; and Bowie, Robert A., to Sperry Corporation. Multiaxis hardover protection apparatus for automatic flight control systems. 4,460,964, Cl. 364-434.000.
Slagley, Michael W. Expandable bandwidth compression and restoration system. 4,461,022, Cl. 381-29.000.
Slana, Matthew F.: *See*—
Scanlon, John M.; and Slana, Matthew F., 4,460,994, Cl. 370-88.000.
Slavik, William H.; and Swanberg, Roger A., to Hoof Products Co. Engine governor. 4,459,954, Cl. 123-350.000.
Slayton, Claude J. Golf game. 4,460,177, Cl. 273-176.0FA.
Slegeir, William A. R.: *See*—
Sapienza, Richard S.; Sansone, Michael J.; and Slegeir, William A. R., 4,460,710, Cl. 518-700.000.
Slemeyer, Andreas, to Siemens Aktiengesellschaft. Method for assuring valid measured values of breath alcohol concentration. 4,459,994, Cl. 128-719.000.
Slob, Arie: *See*—
te Velde, Ties S.; and Slob, Arie, 4,460,914, Cl. 357-51.000.
Smalls, Franklin R.: *See*—
Smalls, Joe C.; and Smalls, Franklin R., 4,460,117, Cl. 224-324.000.
Smalls, Joe C.; and Smalls, Franklin R. Fishing pole holder for automotive vehicles. 4,460,117, Cl. 224-324.000.

Smeltzer, Paul, to Maremont Corporation. Shock absorber with improved back check and anti-dump valve mechanisms. 4,460,073, Cl. 188-322.130.

Smida, George R.: *See—*
Rasmussen, Robert F.; Smida, George R.; Wietecha, Robert L.; and Pearson, Gary L., 4,460,200, Cl. 285-18.000.

Smith, Arthur B.: *See—*
Pytlewski, Louis L.; Krevitz, Kenneth; and Smith, Arthur B., 4,460,797, Cl. 568-715.000.

Smith, David W.: *See—*
Hanson, Timothy A.; and Smith, David W., 4,460,530, Cl. 264-121.000.

Smith & Denison: *See—*
Burkhart, Christopher W., 4,459,844, Cl. 73-40.700.

Smith, Dennis C.; and Maijer, Rolf. Orthodontic attachments. 4,460,336, Cl. 433-9.000.

Smith, Everett H.; and Akkerman, Neil H., to Baker International Corporation. Pump through equalizing check valve for use in intermittent gas lift well. 4,460,048, Cl. 166-375.000.

Smith, George H.; and Olofson, Peter M., to Minnesota Mining and Manufacturing Company. Visible light sensitive, thermally developable imaging systems. 4,460,677, Cl. 430-336.000.

Smith, Lowell S.; and Brisken, Axel F., to General Electric Company. Ultrasonic transducer shading. 4,460,841, Cl. 310-334.000.

Smith & Nephew Research Ltd.: *See—*
Seymour, Donald E., 4,460,369, Cl. 604-897.000.

Smith, Robert H.: *See—*
Johnson, Steven W.; and Smith, Robert H., 4,460,452, Cl. 208-11.0LE.

Smith, Rory J. M.; Sykes, Brenda M.; Terry, Roger S.; Coates, David A.; and Gower, Philip B., to Johnson & Johnson. Disposable protective cap and process and apparatus for its production. 4,459,706, Cl. 2-195.000.

Smith, Russell G., to Xomox Corporation. Tank discharge valve with pressure assisted seat. 4,460,155, Cl. 251-144.000.

Smith, Terrence R.: *See—*
Christopher, Lauren A.; Reitmeier, Glenn A.; Smith, Terrence R.; and Strolle, Christopher H., 4,460,958, Cl. 364-200.000.

Smith, Thomas W.: *See—*
Badesha, Santokh S.; and Smith, Thomas W., 4,460,408, Cl. 75-0.50R.

Smith, William E., to General Electric Company. Catalyst precursor. 4,460,702, Cl. 502-150.000.

SMS Schloemann-Siemag Aktiengesellschaft: *See—*
Kutz, Heinrich; and Jung, Gerd, 4,459,838, Cl. 72-302.000.

Snamprogetti S.p.A.: *See—*
Di Pietro, Raffaele; Paggini, Alberto; and Lagana', Vincenzo, 4,460,378, Cl. 44-54.000.

Snipes, Wallace: *See—*
Keith, Alec D.; and Snipes, Wallace, 4,460,562, Cl. 424-28.000.

Snowden, Roger L.: *See—*
Schulte-Elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., 4,460,792, Cl. 568-341.000.

Snyder Laboratories, Inc.: *See—*
Weilbacher, Eugene E.; and Ransom, Dean A., 4,460,354, Cl. 604-73.000.

Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See—*
Juillard, Yves, 4,460,020, Cl. 139-82.000.

S.A. Constructions Ferroviaires et Metalliques: *See—*
Lemaire, Emmanuel; De Ro, Michel; and Cuylits, Jacques, 4,459,919, Cl. 105-169.000.

Societe Anonyme DBA: *See—*
Meyer, Yves; and Carre, Jean-Jacques, 4,460,070, Cl. 188-73.100.

Societe Anonyme dite: L'OREAL: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,460,488, Cl. 252-89.100.

Societe Chimique des Charbonnages-CdF Chimie: *See—*
Jouffroy, Guy; and Martinot, Bernard, 4,460,545, Cl. 422-131.000.

Societe d'Etudes et Conseills A E R O(Automation-Electronique-Recherche/Operationnelle: *See—*
Fourre, Remy D.; and de Langre, Bruno, 4,460,996, Cl. 371-6.000.

Societe d'Etudes et de Recherches de Ventilation et d'Aeraulique-serva: *See—*
Jardinier, Pierre; and Simonnot, Jack, 4,460,122, Cl. 236-44.00A.

Societe Nationale Elf Aquitaine: *See—*
Clamens, Henri, 4,460,038, Cl. 166-66.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Lazarre, Flavien, 4,460,128, Cl. 239-533.100.
Millouet, Jean; and Staron, Philippe, 4,460,986, Cl. 367-27.000.
Sturtz, Georges, 4,460,548, Cl. 423-10.000.
Tellier, Jacques; Sirvins, Andree ; Gautier, Jean-Claude; and Tramier, Bernard, 4,460,692, Cl. 435-243.000.

Societe Nationale Industrielle et Aerospatiale: *See—*
Gaquere, Jean-Pierre, 4,459,728, Cl. 29-240.000.

Soelberg, Kenneth B.: *See—*
Stark, Marvin M.; Soelberg, Kenneth B.; and Pelzner, Roger B., 4,460,340, Cl. 433-91.000.

Solarz, Gilbert; and Frano, Francis G., to Illinois Tool Works Inc. Self retaining threaded screw grommet. 4,460,298, Cl. 411-15.000.

Soldatov, Anatoly I.: *See—*
Kapitanov, Boris A.; Blatov, Valery G.; Dmitriev, Viktor P.; Enikeev, Gumer K.; Ermilov, Mikhail A.; Soldatov, Anatoly I.; and Cheretaev, Vladimir N., 4,460,516, Cl. 261-1.000.

Somerville, Alvis J.; Conley, Richard B.; and Truitt, Robert B., to IVAC Corporation. Combined load and latch mechanism for fluid flow control apparatus. 4,460,358, Cl. 604-250.000.

Sommer Co.: *See—*
Sommer, Gordon M., 4,460,075, Cl. 192-18.00A.

Sommer, Gordon M., to Sommer Co. Reversing drive unit. 4,460,075, Cl. 192-18.00A.

Sommer, Karl; Schneider, Manfred; and Schickfluss, Rudolf, to Hoechst Aktiengesellschaft. Dyeing-stable monoazo dyestuff, a process for its preparation, and its use. 4,460,375, Cl. 8-526.000.

Somorjai, Gabor A.; and Leygraf, Christofer H., to University of California, The Regents of the. Electrolytic photodissociation of chemical compounds by iron oxide electrodes. 4,460,443, Cl. 204-129.000.

Sonetaka, Kazunori: *See—*
Nishino, Atsushi; Sonetaka, Kazunori; Kimura, Kunio; and Watanabe, Yoshihiro, 4,460,630, Cl. 427-376.200.

Sony Corporation: *See—*
Busby, Bruce, 4,460,890, Cl. 340-347.0DD.
Noda, Teruyoshi; and Ichikawa, Iwao, 4,460,108, Cl. 221-94.000.
Takahashi, Kiyoshi, 4,460,930, Cl. 360-60.000.
Takeshita, Kaneyoshi; and Hamasaki, Masaharu, 4,460,912, Cl. 357-24.000.
Todo, Akira, 4,461,033, Cl. 455-78.000.
Watanabe, Kenjiro, 4,460,636, Cl. 428-212.000.

Sotolongo, Thomas J., to AMP, Incorporated. Junction box for solar modules. 4,460,232, Cl. 339-122.00R.

Southern California Edison Company, Inc.: *See—*
Chan, Alexius C.; Wheeler, Phillip L.; and Chandler, Lloyd H., 4,460,945, Cl. 362-294.000.

Southward, David C., to Sinclair Research Limited. Printing apparatus. 4,460,908, Cl. 346-155.000.

Spahn, Dieter: *See—*
Bachmann, Wolfgang; and Spahn, Dieter, 4,459,733, Cl. 29-433.000.

Sparks, Cullie J., Jr.: *See—*
Ice, Gene E.; and Sparks, Cullie J., Jr., 4,461,018, Cl. 378-84.000.

Spells, Sherwood: *See—*
Lee, Chi-long; and Spells, Sherwood, 4,460,713, Cl. 521-122.000.

Speros, Philip C. Heat exchanger or solar collector. 4,459,976, Cl. 126-449.000.

Sperry Corporation: *See—*
Josephs, Richard M.; Flowers, Ronald A.; and Young, Peter L., 4,459,823, Cl. 62-268.000.
Mittal, Faquir C.; and Curley, Joseph M., 4,460,350, Cl. 493-412.000.
Skutecki, Edmund R.; Griffith, Carl D.; and Bowie, Robert A., 4,460,964, Cl. 364-434.000.

Sperry Limited: *See—*
Walters, Ronald B., 4,459,860, Cl. 73-861.550.

SPICA S.p.A.: *See—*
Roca-Nierga, Manuel; Branchetti, Italo; and Forapianti, Mauro, 4,459,956, Cl. 123-373.000.

Spiess, Erick M. Hand propelled wheelchair. 4,460,190, Cl. 280-247.000.

Spietschka, Ernst; and Urban, Manfred, to Hoechst AG. Process for the manufacture of a perylene tetracarboxylic acid dianhydride pigment. 4,460,410, Cl. 106-19.000.

Spindel-, Motoren- und Maschinenfabrik AG: *See—*
Widmer, Dieter, 4,460,051, Cl. 173-134.000.

Spisak, John F.: *See—*
Shaw, Douglas R.; Spisak, John F.; Downey, Jerome P.; and Butts, Gary E., 4,460,459, Cl. 209-9.000.

Sprayrite Manufacturing Company: *See—*
Moore, John O.; and Griffin, Frank O., 4,459,777, Cl. 47-1.500.

Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., to International Flavors & Fragrances Inc. Process for preparing mono-oxomethyl substituted polyhydrodimethanonaphthalene derivatives. 4,460,795, Cl. 568-446.000.

Spriggs, Robert G., to Automated Optics, Inc. Method and apparatus adapted for automatic or semi-automatic fabrication of ultra-precision opthalmic lenses, e.g., contact lenses. 4,460,275, Cl. 356-358.000.

SRI International: *See—*
DeGraw, Joseph I.; Kelly, Lawrence F.; and Sirotnak, Francis M., 4,460,591, Cl. 424-251.000.

Staal, Ede M.: *See—*
Weststrate, Jan; and Staal, Ede M., 4,460,565, Cl. 424-52.000.

Staat der Nederlanden (Staatsbedrijf der Posterijen, Telegrafie en Telefonie): *See—*
van Bilzem, Jan F.; and van Staveren, Joannes, 4,461,029, Cl. 382-25.000.

Stackhouse, David W., to Ecodyne Corporation. Crossflow cooling tower fill section. 4,460,521, Cl. 261-111.000.

Stahlecker, Fritz, to Stahlecker, Hans; and Stahlecker, Fritz. Method of feeding individual fibers to a spinning rotor and device for carrying out the method. 4,459,800, Cl. 57-411.000.

Stahlecker, Fritz; and Lang, Kurt, to Stahlecker, Fritz; and Stahlecker, Hans. Feeding and opening device for open-end spinning units with a separation opening for impurities. 4,459,801, Cl. 57-412.000.

Stahlecker, Hans: *See—*
Stahlecker, Fritz, 4,459,800, Cl. 57-411.000.
Stahlecker, Fritz; and Lang, Kurt, 4,459,801, Cl. 57-412.000.

Stallings, John P., to Cabot Corporation. Ear protecting device. 4,459,707, Cl. 2-209.000.

Stamicarbon B.V.: *See—*
Gaymans, Reinoud J.; and Bour, Edmond H. J. P., 4,460,762, Cl. 528-335.000.

Stamps, Narvous, Jr.: *See*—
Pizzuti, Donato F.; and Stamps, Narvous, Jr., 4,460,942, Cl. 362-217.000.
Standard-Knapp, Inc.: *See*—
Raudat, John L., 4,459,794, Cl. 53-497.000.
Standard Oil Company (Indiana): *See*—
Hensley, Albert L., Jr.; Miller, Jeffrey T.; Nevitt, Thomas D.; and Tait, A. Martin, 4,460,698, Cl. 502-66.000.
Stanley, Philip E.: *See*—
Lemay, Richard A.; Stanley, Philip E.; Woods, William E.; and Cushing, David E., 4,460,959, Cl. 364-200.000.
Stark, Gary L.: *See*—
Chi, Frank K.; and Stark, Gary L., 4,460,639, Cl. 428-224.000.
Chi, Frank K.; and Stark, Gary L., 4,460,640, Cl. 428-224.000.
Stark, Gerhard; and Blum, Gunther, to Stark, Gerhard. Machine assembly comprising a machine tool and means feeding work thereto. 4,460,081, Cl. 198-341.000.
Stark, Marvin M.; Soelberg, Kenneth B.; and Pelzner, Roger B., to Marvin M. Stark Research Corporation. Receptacle for dental amalgam. 4,460,340, Cl. 433-91.000.
Staron, Philippe: *See*—
Millouet, Jean; and Staron, Philippe, 4,460,986, Cl. 367-27.000.
Stauffer Chemical Co.: *See*—
Teach, Eugene G., 4,460,405, Cl. 71-100.000.
Steer, Peter L.; and Edwards, John V., to Kingsdown Medical Consultants, Ltd. Ostomy bag. 4,460,363, Cl. 604-336.000.
Stef, Claude, to Creusot-Loire. Steering truck. 4,459,918, Cl. 105-157.00R.
Stegmeier, Gerhard; Janocha, Siegfried; and Hensel, Hartmut, to Hoechst Aktiengesellschaft. Sealable, biaxially stretched polypropylene film having high scratch resistance, and process for its manufacture. 4,460,631, Cl. 428-35.000.
Steigerwald, Robert L., to General Electric Company. High frequency parallel resonant dc-dc converter. 4,460,949, Cl. 363-28.000.
Stein Industrie: *See*—
Andro, Jean; and Marjollet, Jacques, 4,460,539, Cl. 376-285.000.
Steinbach, Thomas M.: *See*—
McKee, William H.; and Steinbach, Thomas M., 4,460,230, Cl. 339-106.000.
Steinberg, Ira H., to BOC Group, Inc., The. Vacuum and gas expansion of tobacco. 4,460,000, Cl. 131-296.000.
Steiner, Karl. System to increase vehicle fuel efficiency. 4,460,055, Cl. 180-7.100.
Sterling Drug, Inc.: *See*—
Lewis, Frederick M., 4,459,923, Cl. 110-346.000.
Stern, Ronald C.: *See*—
Heinecke, Rudolf A. H.; and Stern, Ronald C., 4,460,618, Cl. 427-39.000.
Sterns, William G., to International Telephone and Telegraph Corporation. Broad-band printed-circuit balun employing coupled-strip all pass filters. 4,460,877, Cl. 333-26.000.
Steuler Industriewerke, G.m.b.H.: *See*—
Zakrzewski, Erhard, 4,460,552, Cl. 423-210.000.
Stevens, Andrew L.: *See*—
Richardson, Paul C. A.; and Stevens, Andrew L., 4,459,854, Cl. 73-644.000.
Stevens, William P.; and Orefice, Claudio, to Dexter Corporation, The. Nonwoven fibrous backing for vinyl wallcover. 4,460,643, Cl. 428-284.000.
Stewart, Walter F.: *See*—
Barclay, John A.; Overton, William C., Jr.; and Stewart, Walter F., 4,459,811, Cl. 62-3.000.
Stihl, Andreas: *See*—
Dolata, Hans; Meyle, Werner; Kelbert, Adam; and Nitschmann, Karl, 4,459,890, Cl. 83-834.000.
Stoesz, James D.: *See*—
Errede, Louis A.; Stoesz, James D.; and Upton, Jenny, 4,460,642, Cl. 428-283.000.
Stoger, Klaus: *See*—
Birkle, Siegfried; Stoger, Klaus; and Gehring, Johann, 4,460,447, Cl. 204-213.000.
Stogryn, Eugene L.: *See*—
Pan, Yen-Chi; and Stogryn, Eugene L., 4,460,385, Cl. 55-73.000.
Stokes, Ralph E. Gathering plant trash. 4,459,796, Cl. 56-14.300.
Stokes, Robert H.; and Lynch, James F., to United States of America, Navy. Variable focus sonar with curved array. 4,460,987, Cl. 367-103.000.
Stopinc Aktiengesellschaft: *See*—
Hornung, Karl-Otto, 4,460,163, Cl. 266-95.000.
Stopper, Herbert, to Burroughs Corporation. Foldable circuit assembly. 4,460,224, Cl. 339-17.00F.
Stork, Willem H. J.: *See*—
Eilers, Jacobus; and Stork, Willem H. J., 4,460,456, Cl. 208-89.000.
Strait, Ross W., Jr., to Times Fiber Communications, Inc. Optical fiber connector. 4,460,243, Cl. 350-96.210.
Strasilla, Dieter; Meindl, Hubert; Moldovanyi, Laszlo; and Fearnley, Charles, to Ciba-Geigy Corporation. Quaternary, copolymeric, high molecular weight ammonium salts based on acrylic compounds and their use in cosmetics. 4,460,567, Cl. 424-70.000.
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Stratmann, Wilhelm; and Legge, Paul F., to Lever Brothers Company. Fat blend useful for producing butter-like spreads. 4,460,614, Cl. 426-603.000.
Straubel, Max; and Stumpp, Gerhard, to Robert Bosch GmbH. Fuel supply apparatus for internal combustion engines. 4,459,964, Cl. 123-569.000.
Straubel, Max: *See*—
Gross, Werner; and Straubel, Max, 4,459,963, Cl. 123-506.000.
Strautz, Michael G., to AT&T Bell Laboratories. Test apparatus for electrical circuit boards. 4,460,236, Cl. 339-176.00M.
Streifer, William: *See*—
Burnham, Robert D.; Streifer, William; and Scifres, Donald R., 4,461,007, Cl. 372-45.000.
Streiff, Gerard: *See*—
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Strolle, Christopher H.: *See*—
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Studsvik Energiteknik AB: *See*—
Hultgren, Ake, 4,460,500, Cl. 252-628.000.
Stuetz, Dagobert E., to Celanese Corporation. Production of activated carbon fibers from acid contacted polybenzimidazole fibrous material. 4,460,708, Cl. 502-426.000.
Stumpp, Gerhard: *See*—
Straubel, Max; and Stumpp, Gerhard, 4,459,964, Cl. 123-569.000.
Sturtz, Georges, to Societe Nationale Elf Aquitaine (Production). Extraction of uranium with diphosphonic compounds. 4,460,548, Cl. 423-10.000.
Stutzbach, Ronald J.; and Pearce, Richard J. B., to SAB NIFE AB. Battery casing construction and method of making same. 4,460,663, Cl. 429-151.000.
Sugimori, Masahiro: *See*—
Kishida, Kazuo; Hasegawa, Akira; and Sugimori, Masahiro, 4,460,742, Cl. 525-64.000.
Suginaka, Shunji: *See*—
Mizukura, Noboru; Ikeuchi, Satoru; Suginaka, Shunji; and Fujita, Noriko, 4,460,682, Cl. 430-559.000.
Sugita, Yutaka: *See*—
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Sukigara, Kunio; and Kazama, Toyoki, to Fuji Electric Company, Ltd. Method of producing amorphous silicon layer and its manufacturing apparatus. 4,460,673, Cl. 430-128.000.
Sullair Technology AB: *See*—
Schibbye, Lauritz B.; and Fredlund, Sture, 4,460,322, Cl. 418-201.000.
Sullivan, Bruce M.: *See*—
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Sulonen, Martti S.: *See*—
Korhonen, Antti S.; Sirvio, Eero H.; Sulonen, Martti S.; and Sundquist, Heikki A., 4,460,415, Cl. 148-16.600.
Sulzer Brothers, Limited: *See*—
Demuth, Hans; and Gruber, Walter, 4,460,021, Cl. 139-185.000.
Sumito Light Metal Industries, Ltd.: *See*—
Hayashi, Hiromasa; and Mohri, Eiichi, 4,459,837, Cl. 72-255.000.
Sumitomo Chemical Company, Limited: *See*—
Hayatsu, Hikoya; and Nakano, Masahide, 4,460,475, Cl. 210-674.000.
Sumitomo Durez Company, Ltd.: *See*—
Saeki, Yukio; Nemoto, Shigeru; and Tokunaga, Yukio, 4,460,716, Cl. 523-145.000.
Saeki, Yukio; Nemoto, Shigeru; and Tokunaga, Yukio, 4,460,717, Cl. 523-145.000.
Sumitomo Electric Industries, Ltd.: *See*—
Matsumoto, Michito; Kakii, Toshiaki; and Toda, Yuichi, 4,460,820, Cl. 219-385.000.
Sumitomo Kinzoku Kogyo Kabushiki Gaisha: *See*—
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Sun, Joseph C.: *See*—
Kissell, John J.; and Sun, Joseph C., 4,460,430, Cl. 156-504.000.
Sundman, Frey V., to A. Ahlstrom Osakeyhtio. Press for removing water. 4,459,907, Cl. 100-118.000.
Sundquist, Heikki A.: *See*—
Korhonen, Antti S.; Sirvio, Eero H.; Sulonen, Martti S.; and Sundquist, Heikki A., 4,460,415, Cl. 148-16.600.
Sundstrand Corporation: *See*—
Jones, Teddy L., 4,459,867, Cl. 74-89.150.
Sundstrand Data Control, Inc.: *See*—
Hulsing, Rand H., II, 4,459,759, Cl. 33-304.000.
Sung, Rodney L.: *See*—
Karol, Thomas J.; and Sung, Rodney L., 4,460,381, Cl. 44-63.000.
Sweeney, William M.; Sung, Rodney L.; and Crawford, Wheeler C., 4,460,379, Cl. 44-56.000.
Sunouchi, Akio: *See*—
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Suntory Limited: *See*—
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Brenot, Claude, 4,459,770, Cl. 38-34.000.
Suzuki, Hiroshi: *See*—
Nishikawa, Akio; Shitara, Masashi; Era, Susumu; Fukushima, Toshiaki; Suzuki, Hiroshi; and Kohkame, Hisashi, 4,460,783, Cl. 548-549.000.
Suzuki, Junji: *See*—
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Suzuki, Katsuhisa: *See*—
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Suzuki, Kazuyoshi: *See*—
Yoshimi, Akiro; Takemi, Akio; and Suzuki, Kazuyoshi, 4,460,036, Cl. 165-12.000.
Suzuki, Kisaku. Method of shaping food. 4,460,611, Cl. 426-272.000.
Suzuki, Kunihiko, to Nissan Motor Company, Limited. Transaxle mechanism of four-wheel vehicle drive system. 4,459,874, Cl. 74-745.000.
Suzuki, Kunitomo: *See*—
Suzuki, Shinichi; Suzuki, Kunitomo; and Honda, Hiromitsu, 4,460,773, Cl. 544-350.000.
Suzuki Motor Company Limited: *See*—
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,459,953, Cl. 123-198.00F.
Suzuki, Ryo: *See*—
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Suzuki, Shinichi; Suzuki, Kunitomo; and Honda, Hiromitsu, to Lion Corporation. 1-Phenyl-1H-pyrazolo [3,4-b]pyrazine derivatives and process for preparing same. 4,460,773, Cl. 544-350.000.
Suzuki, Shoichi: *See*—
Iioka, Akira; and Suzuki, Shoichi, 4,460,348, Cl. 493-108.000.
Svejkovsky, Roger L. Flexible electrically conductive adhesive tape. 4,460,804, Cl. 174-117.00A.
Svemar, Sten C.: *See*—
Fahlstrom, Per A. H. H.; Back, Erik G.; Svemar, Sten C.; and Wallsten, Bruno C., 4,460,376, Cl. 44-1.00B.
Svensson, Conny, to Elajo Invest Aktiebolag. Self-locking support clamp for mounting items on a support bar. 4,460,141, Cl. 248-222.100.
Swahn, Nils H.: *See*—
Trehn, Karl B.; and Swahn, Nils H., 4,460,965, Cl. 364-464.000.
Swanberg, Roger A.: *See*—
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Swartz, Jerome: *See*—
Shepard, Howard M; Barkan, Edward D.; and Swartz, Jerome, 4,460,120, Cl. 235-472.000.
Sweeney, William M.; Sung, Rodney L.; and Crawford, Wheeler C., to Texaco Inc. Stabilized middle distillate fuel composition. 4,460,379, Cl. 44-56.000.
Sweeney, William R., to Philip Morris, Incorporated. Ultralow pressure relief valve. 4,460,018, Cl. 137-807.000.
Sweetana, Andrew S.: *See*—
Gupta, Tapan K.; Carlson, William G.; and Sweetana, Andrew S., 4,460,497, Cl. 252-518.000.
Swenson, Leonard K.: *See*—
Nobles, John E.; and Swenson, Leonard K., 4,460,395, Cl. 62-18.000.
Swift, Allan W.: *See*—
Moberg, Sigurd M.; and Swift, Allan W., 4,460,203, Cl. 292-318.000.
Swihart, Terence J.: *See*—
Blizzard, John D.; and Swihart, Terence J., 4,460,712, Cl. 521-92.000.
Swiss Aluminum Ltd.: *See*—
Horn, Werner; and Hennings, Jurgen, 4,460,418, Cl. 148-437.000.
Sydekum, Heinz: *See*—
Muller, Gerd; Koller, Manfred; and Sydekum, Heinz, 4,460,074, Cl. 188-322.140.
Sykes, Brenda M.: *See*—
Smith, Rory J. M.; Sykes, Brenda M.; Terry, Roger S.; Coates, David A.; and Gower, Philip B., 4,459,706, Cl. 2-195.000.
Sylver National Industries, Inc.: *See*—
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Symbol Technologies, Inc.: *See*—
Shepard, Howard M; Barkan, Edward D.; and Swartz, Jerome, 4,460,120, Cl. 235-472.000.
Synthelabo: *See*—
Kaplan, Jean-Pierre; and George, Pascal, 4,460,592, Cl. 424-256.000.
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Szentmiklosi, Peter: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermes, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari nee Debreczy, Lelle; and David, Agoston, 4,460,771, Cl. 544-282.000.
Szmuszkovicz, Jacob: *See*—
Kaplan, Lester J.; McMillan, Moses W.; and Szmuszkovicz, Jacob, 4,460,600, Cl. 424-274.000.
Tachibana, Masami: *See*—
Sato, Akihiro; Tachibana, Masami; Uwai, Toshihiro; Matsuda, Kenji; and Higuchi, Yoshiharu, 4,460,757, Cl. 526-114.000.
Tadokoro, Tomoo; Nakao, Masami; Okimoto, Haruo; and Iwaki, Masato, to Toyo Kogyo Co., Ltd. Turbocharger bypass control for internal combustion engines. 4,459,809, Cl. 60-602.000.
Taguchi, Tokuichi: *See*—
Furukawa, Tadayasu; Taguchi, Tokuichi; Yamamoto, Kazuhiro; and Ohta, Shigenori, 4,460,615, Cl. 426-657.000.
Tait, A. Martin: *See*—
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Tait, Robert J.: *See*—
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Taiyo Yuden Co., Ltd.: *See*—
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Tajima, Shigeru: *See*—
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Takagi, Shigeru: *See*—
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Takagi, Shozo. Mold supporting arrangement in a press. 4,459,909, Cl. 100-295.000.
Takahashi, Kiyoshi, to Sony Corporation. Erroneous erasure preventing apparatus. 4,460,930, Cl. 360-60.000.
Takahashi, Shiro; Nakagawa, Yoshio; and Hosoda, Yutaka, to Asahi Glass Company Ltd. Method for heating a riser of molten refractory material. 4,460,524, Cl. 264-26.000.
Takamiya, Kikuzo; and Ishibashi, Hideyuki, to Bridgestone Cycle Co., Ltd. Frame for folding bicycle. 4,460,192, Cl. 280-287.000.
Takamiya, Kikuzo: *See*—
Ishibashi, Hideyuki; and Takamiya, Kikuzo, 4,460,191, Cl. 280-287.000.
Takamizawa, Yoshikazu: *See*—
Koumi, Noboru; Nishitani, Takeshi; Okayasu, Kazuo; and Takamizawa, Yoshikazu, 4,460,012, Cl. 137-454.600.
Takano, Shinji; and Horita, Yoshiyuki, to Yoshida Kogyo K. K. Slide fastener stringer and method and device for forming an end thereof. 4,459,723, Cl. 24-434.000.
Takara Kogyo Co., Ltd.: *See*—
Ueda, Yoshihiko, 4,460,467, Cl. 210-276.000.
Takashima, Hiroaki; Kato, Osamu; Uemura, Seiichi; Yamamoto, Shunichi; and Hirose, Takao, to Nippon Oil Co., Ltd. Starting pitches for carbon fibers. 4,460,557, Cl. 423-447.100.
Takashima, Kohki: *See*—
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Takasugi, Hisashi: *See*—
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,460,583, Cl. 424-246.000.
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,460,583, Cl. 424-246.000.
Takeda Chemical Industries, Ltd.: *See*—
Matsumura, Koichi; and Aono, Tetsuya, 4,460,767, Cl. 536-124.000.
Takeda, Kazuo: *See*—
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Takeda Riken Kogyo Kabushiki Kaisha: *See*—
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Takematsu, Tetsuo; Segawa, Hirozo; Miura, Takamaro; Ataka, Toshiei; Chatani, Michio; and Nakamura, Akira, to Kyowa Gas Chemical Industry Co., Ltd. 2,3-Dicyano 6 phenyl pyrazine herbicides. 4,460,403, Cl. 71-93.000.
Takemi, Akio: *See*—
Yoshimi, Akiro; Takemi, Akio; and Suzuki, Kazuyoshi, 4,460,036, Cl. 165-12.000.
Takemura, Yasuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid-state color television camera device. 4,460,919, Cl. 358-44.000.
Takeno, Hidekazu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Kada, Satoshi; and Hashimoto, Masashi, 4,460,502, Cl. 260-112.50R.
Takeno, Ryuko: *See*—
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Takeshita, Kaneyoshi; and Hamasaki, Masaharu, to Sony Corporation. Solid state image sensors. 4,460,912, Cl. 357-24.000.
Takeuchi, Hisaharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Control apparatus for a recording/playback system using an endless recording medium. 4,460,931, Cl. 360-71.000.
Takeuchi, Osamu: *See*—
Asai, Minoru; Aoki, Kiyoshi; and Takeuchi, Osamu, 4,460,330, Cl. 431-170.000.
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Takeuchi, Teruaki: *See*—
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Takiguchi, Makoto: *See*—
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Tamaki, Kazuyoshi, to Nippondenso Co., Ltd. Circuit arrangement for preventing a microcomputer from malfunctioning. 4,461,003, Cl. 371-66.000.
Tamama, Teruo: *See*—
Murase, Katsumi; Tamama, Teruo; Amemiya, Yoshihito; and Mizushima, Yoshihiko, 4,460,417, Cl. 148-187.000.
Tanabe, Kenzo; and Suzuki, Junji, to Matsushita Electric Industrial Co., Ltd. Transistor balanced mixer. 4,461,042, Cl. 455-333.000.
Tanabe Seiyaku Co., Ltd.: *See*—
Matsumoto, Kazuo; and Takashima, Kohki, 4,460,596, Cl. 424-272.000.
Tanaka, Isamu; Oka, Hitoshi; Tomizawa, Akira; and Kikuchi, Hiroshi, to Hitachi, Ltd. Epoxy resin composition. 4,460,718, Cl. 523-400.000.
Tanaka, Kazuo: *See*—
Hasumi, Shigeru; Tanaka, Kazuo; and Nishidoi, Takashi, 4,460,060, Cl. 181-169.000.
Tanaka, Tsuneo: *See*—
Haga, Kyosuke; and Tanaka, Tsuneo, 4,460,016, Cl. 137-625.240.
Tani, Mitsukiyo; and Kawashima, Seiichi, to Hitachi, Ltd. Resistance reflow soldering apparatus. 4,460,817, Cl. 219-85.00D.
Tanimoto, Akira; and Saiji, Mitsuhiro, to Sharp Kabushiki Kaisha. Electronic translator for marking words or sentences. 4,460,973, Cl. 364-900.000.
Tardy, Rene; and Benaben, Patrick, to Association pour Recherche et le Developpement des Methodes et Processu Industriels (ARMINES). Process for the electrolytic deposit of chromium. 4,460,438, Cl. 204-51.000.
Tassart, Christian: *See*—
Paravigna, Zivko; Boursaud, Jack; and Tassart, Christian, 4,460,010, Cl. 137-259.000.
Tate, Kazuhito: *See*—
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Moriya, Kunihiko; Tate, Kazuhito; Muroga, Goro; and Yanagida, Kazuhiro, 4,460,455, Cl. 208-40.000.
Taube, William L., to Metal Box Can, Inc. Embossing machine with indexing mechanism. 4,459,910, Cl. 101-18.000.
Taylor, David L.: *See*—
Jiang, Ching-Lin; and Taylor, David L., 4,460,978, Cl. 365-154.000.
Taylor, Norman J., to Varian Associates, Inc. Collector-output for hollow beam electron tubes. 4,460,846, Cl. 315-5.380.
TDK Corporation: *See*—
Azegami, Hitoshi; Kawahara, Hiroshi; and Shibata, Fujio, 4,460,653, Cl. 428-425.900.
Hosaka, Akihiko; Okuyama, Kiyotaka; and Kanazawa, Kiyoto, 4,460,651, Cl. 428-402.000.
Teach, Eugene G., to Stauffer Chemical Co. Dichlorosacetyl thioesters as herbicidal antidotes. 4,460,405, Cl. 71-100.000.
Teele, John H. Ear pathology diagnosis apparatus and method. 4,459,996, Cl. 128-746.000.
Tefertiller, Nancy B.: *See*—
Hoffman, Dwight K.; Harris, Robert F.; Tefertiller, Nancy B.; and Rains, Randall C., 4,460,715, Cl. 521-137.000.
Teledyne Industries, Inc.: *See*—
Hanson, Timothy A.; and Smith, David W., 4,460,530, Cl. 264-121.000.
Teleflex Morse Ltd.: *See*—
Gill, John G.; and Hemens, James F., 4,459,870, Cl. 74-471.0XY.
Tellier, Jacques; Sirvins, Andree ; Gautier, Jean-Claude; and Tramier, Bernard, to Societe Nationale Elf Aquitaine (Production). Microemulsion of nutrient substances. 4,460,692, Cl. 435-243.000.
Temple University: *See*—
Labes, Mortimer M.; and Lee, Heewon, 4,460,492, Cl. 252-299.600.
Terada, Tomohiko; and Komada, Hideaki, to Diesel Kiki Company, Ltd. Fuel injection system. 4,459,959, Cl. 123-446.000.
Terahara, Akira: *See*—
Naito, Atsushi; Nakagawa, Fumio; Okazaki, Takao; Terahara, Akira; Iwado, Seigo; and Yamazaki, Mitsuo, 4,460,765, Cl. 536-26.000.
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Mizutani, Shunsuke; and Sakakibara, Yozo, to Toyota Jidosha Kabushiki Kaisha; and Aisan Industry Co., Ltd. Device for controlling the operation of a carburetor. 4,460,518, Cl. 261-39.00A.
Terano, Minoru; Kimura, Kouhei; Murai, Atsushi; Inoue, Masuo; and Miyoshi, Katsuyoshi, to Toho Titanium Co., Ltd. Process for the preparation of catalyst component for the polymerization of olefins. 4,460,701, Cl. 502-104.000.
Teraoka, Kazuharu, to Teraoka Seiko Co. Ltd. Scaling and labeling apparatus. 4,460,428, Cl. 156-360.000.
Teraoka Seiko Co. Ltd.: *See*—
Teraoka, Kazuharu, 4,460,428, Cl. 156-360.000.
Terauchi, Kiyoshi, to Sanden Corporation. Axial clearance adjustment mechanism for scroll type fluid displacement apparatus. 4,460,321, Cl. 418-55.000.
Terauchi, Takashi; Sato, Koji; and Hoshi, Shoichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Catalyst for oxidative dimerization. 4,460,705, Cl. 502-303.000.
Terry, Roger S.: *See*—
Smith, Rory J. M.; Sykes, Brenda M.; Terry, Roger S.; Coates, David A.; and Gower, Philip B., 4,459,706, Cl. 2-195.000.
Terumo Corporation: *See*—
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Terunuma, Noboru: *See*—
Kitoh, Makoto; Tajima, Tetsuo; Terunuma, Noboru; Mitsugi, Noboru; and Kageyama, Akira, 4,460,535, Cl. 264-262.000.
Tetra Pak International A.B.: *See*—
Rauser, Jan A. I.; and Knudsen, Gunnar, 4,460,425, Cl. 156-244.230.
te Velde, Ties S.; and Slob, Arie, to U.S. Philips Corporation. Programmable semiconductor device and method of manufacturing same. 4,460,914, Cl. 357-51.000.
Teves-Thompson GmbH: *See*—
Weintz, Richard, 4,459,949, Cl. 123-188.0GC.
Texaco Inc.: *See*—
Karol, Thomas J.; and Sung, Rodney L., 4,460,381, Cl. 44-63.000.
Schievelbein, Vernon H., 4,460,481, Cl. 253-8.55D.
Sweeney, William M.; Sung, Rodney L.; and Crawford, Wheeler C., 4,460,379, Cl. 44-56.000.
Texas Instruments Incorporated: *See*—
Chalmin, Jean-Pierre; and Doherty, John, Jr., 4,460,124, Cl. 236-48.00R.
Risinger, Vance, 4,460,952, Cl. 363-61.000.
Th. Goldschmidt Ag: *See*—
Fock, Jurgen; Schedlitzki, Dietmar; and Wacker, Holger, 4,460,746, Cl. 525-117.000.
Theilen, Rolf; and Kleinhanns, Manfred, to Triumph-Adler A.G. fur Buro- und Informationstechnik. Ribbon lift mechanism for typewriters and the like machines. 4,460,287, Cl. 400-213.100.
Thermo Electron Corporation: *See*—
Oettinger, Peter E.; and Lee, Chunghsin, 4,460,831, Cl. 250-492.200.
Thien, Gerhard: *See*—
Kirchweger, Karl; Knopf, Franz; and Thien, Gerhard, 4,459,944, Cl. 123-41.660.
Thiersault, Jean-Paul; Senez, Alain; and Vidal, Jean L., to BP Chimie S.A. Process for the treatment of linear low density polyethylene by organic peroxides which generate free radicals. 4,460,750, Cl. 525-333.800.
Thomas & Betts Corporation: *See*—
Matthews, Russell H., 4,460,229, Cl. 339-99.00R.
Thomas, Daniel A.; Malone, Paul E.; and Goth, Gary F., to General Electric Company. Method and apparatus for detecting abnormal metal-to-metal contact in a journal bearing. 4,460,893, Cl. 340-682.000.
Thomas, Jacob E., to NCR Corporation. Control valve for ink jet nozzles. 4,460,905, Cl. 346-140.00R.
Thomas, Joseph S., Jr.: *See*—
Lundberg, Duane R.; and Thomas, Joseph S., Jr., 4,460,170, Cl. 272-65.000.
Thomas, William K. Hydraulic forming process and apparatus. 4,459,836, Cl. 72-61.000.
Thompson, Bradley G.; and Jack, Thomas R., to NOVA/Husky Research Corporation Ltd. Method of enhancing oil recovery by use of exopolymer producing microorganisms. 4,460,043, Cl. 166-246.000.
Thompson, Ralph P., to Organon Teknika Corporation. Ammonia scavenger. 4,460,555, Cl. 423-309.000.
Thomsen, Peter: *See*—
Morner, Bengt O. J. S.; and Thomsen, Peter, 4,460,072, Cl. 188-77.00R.
Thomson-Brandt: *See*—
Romeas, Rene, 4,460,927, Cl. 358-342.000.
Thomson-CSF: *See*—
Dehaene, Jean P., 4,461,012, Cl. 375-62.000.
Fouillet, Jean; and Cruchon, Jean C., 4,460,878, Cl. 333-207.000.
Graciet, Michel; Romann, Annick; and Buchy, Francois, 4,460,624, Cl. 427-102.000.
Najman, Michel, 4,460,876, Cl. 330-296.000.
Volleau, Patrick; Chaboche, Michel; and Bricot, Claude, 4,460,252, Cl. 350-486.000.
Thormer, Joachim: *See*—
Bartl, Herbert; Rudolph, Hans; and Thormer, Joachim, 4,460,446, Cl. 204-159.170.
Thumm, Helmut; Bahr, Theodor; and Ortner, Herbert, to J. M. Voith GmbH. Pulper for producing paper pulp suspensions. 4,460,132, Cl. 241-46.110.
Tibbles, Thomas T., to Ford Motor Company. Clutch actuator. 4,459,872, Cl. 74-701.000.
Tie Down Engineering, Inc.: *See*—
Wilson, Richard C., 4,459,905, Cl. 100-35.000.
Tillotson, Darrell A. Choker fair-lead assembly for tractors. 4,460,160, Cl. 254-386.000.
Times Fiber Communications, Inc.: *See*—
Strait, Ross W., Jr., 4,460,243, Cl. 350-96.210.
Tinz, Bernhard H., to Lunos Luftung GmbH & Co. Ventilatoren KG. Reflector arrangement for photo-technical and photographic purpose. 4,460,946, Cl. 362-319.000.
Tisue, James G.: *See*—
Krull, Irwin H.; and Tisue, James G., 4,460,967, Cl. 364-497.000.

Titus, Charles H., to Electro-Petroleum, Inc. Power supply circuit for a direct current arc furnace. 4,461,010, Cl. 373-108.000.
Tivelius, Bertil G., to Scandinavian Lancers Aktiebolag. Apparatus for refining of steel melts. 4,460,164, Cl. 266-158.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Inoue, Hiroshi; Isoi, Masaaki; and Sei, Kazuo, 4,460,646, Cl. 428-344.000.
Tobinaga, Motoi; and Nasuda, Yutaka, to Yamaka Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisita. Overheat preventing system for internal combustion engines. 4,459,951, Cl. 123-198.0DC.
Tobler, Hans; and Fory, Werner, to Ciba-Geigy Corporation. Dihydropyrones, novel starting products used therein, compositions containing the novel dihydropyrones as active ingredients, and the use thereof for combating weeds. 4,460,400, Cl. 71-88.000.
Toda, Yuichi: *See*—
Matsumoto, Michito; Kakii, Toshiaki; and Toda, Yuichi, 4,460,820, Cl. 219-385.000.
Todo, Akira, to Sony Corporation. Transceiver. 4,461,033, Cl. 455-78.000.
Toho Beslon Co., Ltd.: *See*—
Ogawa, Hiroyasu; Izumi, Kazuo; and Shimazaki, Kenzi, 4,460,650, Cl. 428-389.000.
Toho Titanium Co., Ltd.: *See*—
Terano, Minoru; Kimura, Kouhei; Murai, Atsushi; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,460,701, Cl. 502-104.000.
Tokai Electric Wire Company Limited: *See*—
Inoue, Nori, 4,460,239, Cl. 339-258.00F.
Tokarzewski, Richard J.: *See*—
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,460,795, Cl. 568-446.000.
Tokes, Zoltan A.; Rogers, Kathryn E.; and Rembaum, Alan, to University of Southern California. Drug delivery by polymeric carriers. 4,460,560, Cl. 424-1.100.
Tokunaga, Yukio: *See*—
Saeki, Yukio; Nemoto, Shigeru; and Tokunaga, Yukio, 4,460,716, Cl. 523-145.000.
Saeki, Yukio; Nemoto, Shigeru; and Tokunaga, Yukio, 4,460,717, Cl. 523-145.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hirano, Yoshimi; and Shigeta, Takashi, 4,459,826, Cl. 62-430.000.
Ikeda, Tsutomu; Iwamoto, Masanori; and Kizu, Shuji, 4,461,027, Cl. 382-9.000.
Kamata, Isao; and Oyama, Satoshi, 4,460,937, Cl. 361-333.000.
Masuoka, Fujio, 4,460,835, Cl. 307-296.00R.
Takemura, Yasuo, 4,460,919, Cl. 358-44.000.
Takeuchi, Hisaharu, 4,460,931, Cl. 360-71.000.
Tomita, Masahiro: *See*—
Kamiya, Sigeru; Takagi, Shigeru; Nozawa, Masaei; Tomita, Masahiro; and Hayashi, Nobutoshi, 4,459,805, Cl. 60-303.000.
Tomizawa, Akira: *See*—
Tanaka, Isamu; Oka, Hitoshi; Tomizawa, Akira; and Kikuchi, Hiroshi, 4,460,718, Cl. 523-400.000.
Tomonori, Sano, to Rhythm Watch Co., Ltd. Alarm setting device for timepieces. 4,460,280, Cl. 368-74.000.
Tompkins, John C.: *See*—
Moon, Jack L.; and Tompkins, John C., 4,460,308, Cl. 414-786.000.
Toombs, Donnie T., Jr.: *See*—
Harris, Charles E.; and Toombs, Donnie T., Jr., 4,460,531, Cl. 264-138.000.
Toplicescu, Ioan. Press for synthetic diamonds. 4,460,323, Cl. 425-77.000.
Toray Industries, Inc.: *See*—
Hasumi, Shigeru; Tanaka, Kazuo; and Nishidoi, Takashi, 4,460,060, Cl. 181-169.000.
Torkelsen, John B.; and Hoolihan, Kevin M., to Saga Data, Inc. Easily accessible formating of computer printouts. 4,460,975, Cl. 364-900.000.
Tow, Jimmy: *See*—
Battista, Ralph N.; Groves, Quentin D.; and Tow, Jimmy, 4,460,808, Cl. 179-84.0VF.
Toyama Chemical Company, Limited: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,460,774, Cl. 544-366.000.
Toyama, Hiromi; Nojiri, Chuhei; Shomura, Takashi; and Yamada, Yujiro, to Meiji Seika Kaisha Ltd. Plasmids derived from Actinomycetes. 4,460,693, Cl. 435-317.000.
Toyo Denki Kogyosho Co., Ltd.: *See*—
Araoka, Toshinobu, 4,460,181, Cl. 277-12.000.
Toyo Engineering Corporation: *See*—
Matsubara, Tetsuyuki; Ito, Norifumi; Ishida, Yuzuru; Iwamoto, Mune; and Maeda, Tetsuo, 4,460,278, Cl. 366-149.000.
Toyo Kogyo Co., Ltd.: *See*—
Tadokoro, Tomoo· Nakao, Masami; Okimoto, Haruo; and Iwaki, Masato, 4,459,809, Cl. 60-602.000.
Toyoda Gosei Co., Ltd.: *See*—
Hori, Yoshimi; Ishida, Takashi; and Hayashi, Keizo, 4,460,325, Cl. 425-393.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Haga, Kyosuke; and Tanaka, Tsuneo, 4,460,016, Cl. 137-625.240.
Toyota Jidosha Kabushiki Kaisha: *See*—
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Mizutani, Shunsuke; and Sakakibara, Yozo, 4,460,518, Cl. 261-39.00A.
Ueno, Makoto; and Hori, Kohei, 4,459,960, Cl. 123-481.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Haraga, Tetsuo; Nomura, Ryuji; Kai, Isao; and Yamasaki, Motoyoshi, 4,460,629, Cl. 427-221.000.
Katagiri, Masayoshi; and Kondo, Toshio, 4,460,067, Cl. 188-1.110.
Sasase, Naoshi; Inagaki, Nobukatsu; Hayashi, Yoshihiro; and Nishimura, Yuji, 4,460,198, Cl. 280-804.000.
Tramier, Bernard: *See*—
Tellier, Jacques; Sirvins, Andree ; Gautier, Jean-Claude; and Tramier, Bernard, 4,460,692, Cl. 435-243.000.
Transamerica DeLaval, Inc.: *See*—
Zacharkow, Stanley W.; and Morgan, William D., 4,460,465, Cl. 210-266.000.
Trappmann, Klaus; and Kruger, Wolfgang, to MTU Motogren-Und Turbinen-Union. Apparatus for minimizing and maintaining constant the blade tip clearance of axial-flow turbines in gas turbine engines. 4,460,311, Cl. 415-116.000.
Trechel, Robert G.: *See*—
Pedersen, James R.; Parker, David M.; and Trechel, Robert G., 4,460,659, Cl. 428-675.000.
Trehn, Karl B.; and Swahn, Nils H. Device for the use of and easily carried by an individual. 4,460,965, Cl. 364-464.000.
Trent, Bryan O., to Heil-Quaker Corporation. Power vent and control for furnace. 4,460,329, Cl. 431-20.000.
Tresper, Erhard: *See*—
Neuray, Dieter; Margotte, Dieter; Tresper, Erhard; and Jacobs, Gunter, 4,460,752, Cl. 525-462.000.
Tri Tool, Inc.: *See*—
Astle, William H., 4,459,883, Cl. 82-4.00C.
Tricoles, Gus P.; and Rope, Eugene L., to General Dynamics Corporation, Electronics Division. Integrated antenna-radome structure that functions as a self-referencing interferometer. 4,460,901, Cl. 343-872.000.
Tritt, Paul G.: *See*—
Heimovics, John F., Jr.; and Tritt, Paul G., 4,460,343, Cl. 441-40.000.
Triumph-Adler A.G. fur Buro- und Informationstechnik: *See*—
Theilen, Rolf; and Kleinhanns, Manfred, 4,460,287, Cl. 400-213.100.
Trouw, Norman: *See*—
Froix, Michael F.; and Trouw, Norman, 4,460,736, Cl. 524-539.000.
Trubiano, Paolo C.: *See*—
Barndt, Richard L.; Zwiercan, Gary A.; and Trubiano, Paolo C., 4,460,617, Cl. 426-609.000.
Truitt, Robert B.: *See*—
Somerville, Alvis J.; Conley, Richard B.; and Truitt, Robert B., 4,460,358, Cl. 604-250.000.
TRW Inc.: *See*—
McKee, William H.; and Steinbach, Thomas M., 4,460,230, Cl. 339-106.000.
Trybulski, Eugene J.: *See*—
Field, George F.; Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,460,781, Cl. 548-356.000.
Tsang, Floris Y.: *See*—
Damrow, Paul A.; and Tsang, Floris Y., 4,460,662, Cl. 429-104.000.
Tseng, Bang-Tsai. Tortuous passage cover for flexible liquid container. 4,460,101, Cl. 215-307.000.
Tseng, Wu-Yang; and Lampsat, Bruno G., to General Electric Company. Turbomachine rotor assembly. 4,460,315, Cl. 416-216.000.
Tsubakihara, Osamu; Kagaya, Koji; Okada, Hiroo; and Kawashima, Katsuhiro, to Nippon Steel Corporation. Method for continuous casting of steel. 4,460,033, Cl. 164-454.000.
Tsuchiya, Koji; and Pernick, David, to Monarch Knitting Machinery Corporation. Yarn clipping device for circular knitting machines. 4,459,830, Cl. 66-140.00S.
Tsuchiya, Shozo; Ohshima, Akio; and Hayashi, Hideo, to Nippon Oil Co., Ltd. Hot melt composition containing a hydrogenated resin copolymer. 4,460,724, Cl. 524-77.000.
Tsuda, Hiroshi; and Matsuoka, Hideoki, to Nissan Motor Company, Limited. Position memory for automatically adjustable seat assemblies. 4,460,217, Cl. 297-361.000.
Tsuda, Hisatsugu: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,460,774, Cl. 544-366.000.
Tsuji, Kiyoshi: *See*—
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,460,583, Cl. 424-246.000.
Tsujii, Katsushi: *See*—
Kobayashi, Hiroyasu; Inoue, Akihisa; and Tsujii, Katsushi, 4,460,633, Cl. 428-110.000.
Tsunekawa, Tokuichi; Hosoe, Kazuya; and Masunaga, Makoto, to Canon Kabushiki Kaisha. Device using signal integration and storing type image sensing means. 4,460,836, Cl. 307-311.000.
Tsunemura, Kazuo; Iha, Kiyoshi; and Janiszewski, Anthony T., to Chamberlain Manufacturing Corporation. Collapsible garage door. 4,460,030, Cl. 160-35.000.
Tsushima, Rikio: *See*—
Abe, Yoshiaki; and Tsushima, Rikio, 4,460,566, Cl. 424-70.000.
Tune O Mize Inc.: *See*—
Harrington, Eugene, 4,459,846, Cl. 73-114.000.
Tupper, Alan W. Load-transfer system. 4,459,916, Cl. 104-106.000.
Turk, Herbert; and Schiminski, Herbert, to Barmag Barmer Maschinenfabrik AG. Winding device. 4,460,133, Cl. 242-18.00A.

Turlak, Robert J.; Williams, Bolie C., III; and Schaeper, Gary R., to Cameron Iron Works, Inc. Annular blowout preventer. 4,460,150, Cl. 251-1.00B.

Turner, Brian, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Circuit matching elements. 4,460,880, Cl. 333-238.000.

Turner, S. Richard: *See*—
Peiffer, Dennis G.; Lundberg, Robert D.; Kowalik, Ralph M.; and Turner, S. Richard, 4,460,758, Cl. 526-287.000.

Turner, Thomas F.; and Moore, Dennis F., to United States of America, Energy. Characterization of in situ oil shale retorts prior to ignition. 4,460,218, Cl. 299-1.000.

Turner, William F.: *See*—
Murr, Paul G.; and Turner, William F., 4,460,811, Cl. 200-51.030.

Twigg, Martyn V., to Imperial Chemical Industries PLC. Catalyst for the production of hydrogen. 4,460,704, Cl. 502-302.000.

Twin Disc, Incorporated: *See*—
Black, James B., 4,459,873, Cl. 74-720.000.

UBE Industries, Ltd.: *See*—
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; and Shimazaki, Hiroshi, 4,460,526, Cl. 264-41.000.

Uchida, Tadahiro: *See*—
Wakita, Hiizu; and Uchida, Tadahiro, 4,460,351, Cl. 494-16.000.

Ueda, Yoshihiko, to Takara Kogyo Co., Ltd., a part interest. Water purification device. 4,460,467, Cl. 210-276.000.

Uehara, Masafumi; Yamamoto, Takeshi; Yamazaki, Atsuo; and Aoki, Tohru, to Konishiroku Photo Industry Co., Ltd. Posi-type quinone diazide photosensitive composition with sensitizer therefor. 4,460,674, Cl. 430-190.000.

Uehira, Eiji, to Fujitsu Ten Limited. Input protecting circuit for a semiconductor circuit component. 4,460,935, Cl. 361-91.000.

Uekusa, Yasuyuki: *See*—
Mizote, Masanori; and Uekusa, Yasuyuki, 4,460,035, Cl. 165-12.000.

Uemura, Seiichi: *See*—
Takashima, Hiroaki; Kato, Osamu; Uemura, Seiichi; Yamamoto, Shunichi; and Hirose, Takao, 4,460,557, Cl. 423-447.100.

Ueno, Makoto; and Hori, Kohei, to Toyota Jidosha Kabushiki Kaisha. Split engine. 4,459,960, Cl. 123-481.000.

Ulicny, Dennis J., to ECM Motor Co. Electric motor with braking arrangement. 4,460,838, Cl. 310-76.000.

Ullman, Myron E., Jr.: *See*—
Kessler, Ronald N.; Rose, June S.; and Ullman, Myron E., Jr., 4,460,095, Cl. 211-69.100.

Ulman, James W. Friction and wear reducing system for lacrosse sticks. 4,460,178, Cl. 273-326.000.

Umehara, Masaakira: *See*—
Kunikane, Makoto; Abe, Michiharu; and Umehara, Masaakira, 4,460,665, Cl. 428-199.000.

Umesaki, Shigeo: *See*—
Yamato, Akihiro; and Umesaki, Shigeo, 4,459,962, Cl. 123-493.000.

Umezaki, Hiroshi: *See*—
Imura, Ryo; Ikeda, Tadashi; Suzuki, Ryo; Koiso, Nagatugu; Takeuchi, Teruaki; Umezaki, Hiroshi; and Sugita, Yutaka, 4,460,412, Cl. 148-1.500.

Unger, Guenther. Method and apparatus for burning inerts, particularly flotation addles middlings, clarification ponds and/or domestic refuse as a firing material in a grate firing. 4,459,921, Cl. 110-226.000.

Union Carbide Corporation: *See*—
Mohr, Paul H.; and Zientek, Eugene A., 4,460,478, Cl. 252-75.000.
Williams, Gary H.; and Karol, Frederick J., 4,460,755, Cl. 526-84.000.

Union Oil Company of California: *See*—
Simpson, Howard D., 4,460,707, Cl. 502-315.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Hilsum, Cyril; and Raynes, Edward P., 4,460,247, Cl. 350-331.00T.
Turner, Brian, 4,460,880, Cl. 333-238.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the: *See*—
Rengger, Ralph E.; and Manning, David R., 4,461,024, Cl. 381-46.000.

U.S. Manufacturing Company: *See*—
Leal, Joseph M.; and Malone, James M., 4,459,709, Cl. 3-2.000.

United States of America
Air Force: *See*—
Bascom, Keith B.; and Hamon, Burrell N., 4,460,514, Cl. 260-544.00F.
Marshall, Charles, 4,459,803, Cl. 60-39.230.
Salour, Michael M.; and Roxlo, Charles B., 4,461,006, Cl. 372-35.000.
Army: *See*—
Buser, Rudolph G.; Nomiyama, Neal T.; and Dunn, Aubrey J., 4,460,424, Cl. 156-242.000.
Chen, Pi-Fuay; Rohde, Frederick W.; and Seemuller, William W., 4,460,969, Cl. 364-727.000.
Gutleber, Frank S., 4,460,992, Cl. 370-19.000.
Energy: *See*—
Barclay, John A.; Overton, William C., Jr.; and Stewart, Walter F., 4,459,811, Cl. 62-3.000.
Horton, Joel R., 4,460,318, Cl. 417-54.000.
Ice, Gene E.; and Sparks, Cullie J., Jr., 4,461,018, Cl. 378-84.000.
Sapienza, Richard S.; Sansone, Michael J.; and Slegeir, William A. R., 4,460,710, Cl. 518-700.000.
Turner, Thomas F.; and Moore, Dennis F., 4,460,218, Cl. 299-1.000.
Navy: *See*—
Dexter, Fred A., 4,459,935, Cl. 114-340.000.
Harvey, James F., 4,460,828, Cl. 250-329.000.
Lundstrom, Eric A., 4,461,009, Cl. 372-108.000.
Stokes, Robert H.; and Lynch, James F., 4,460,987, Cl. 367-103.000.

U.S. Philips Corporation: *See*—
Derks, Pierre L. L. M.; and Van Herwijnen, Gerardus, 4,460,619, Cl. 427-57.000.
Hubner, Horst; Magendans, Frederik; and Van Rheenen, Bernhard J. P., 4,461,020, Cl. 378-143.000.
Leramacher, Bernhard, 4,461,019, Cl. 378-125.000.
Op de Beek, Johannes C. A., 4,460,961, Cl. 364-414.000.
Opheij, Willem G., 4,460,990, Cl. 369-112.000.
Post, Sieghard; and Mehl, Siegfried, 4,460,884, Cl. 336-73.000.
Salters, Roelof H. W., 4,460,911, Cl. 357-23.600.
Schwarz, Henning; and Bulse, Ulf H., 4,461,021, Cl. 381-2.000.
te Velde, Ties S.; and Slob, Arie, 4,460,914, Cl. 357-51.000.
Van Der Hoek, Jan L.; and Blom, Bartholomeus W. M., 4,460,883, Cl. 336-65.000.
Waanders, Jan W.; van Heek, Herman F.; Colson, Roger A.; and Perduijn, David J., 4,460,842, Cl. 310-338.000.
Weiss, Hermann; and Klotz, Erhard, 4,461,016, Cl. 378-23.000.

United Technologies Corporation: *See*—
Keilbach, Joseph R.; Lehrach, Ronald P. C.; and Kay, Ira W., 4,459,845, Cl. 73-113.000.
Walsh, Thomas C., 4,460,309, Cl. 415-1.000.

Universal Valve Co., Inc.: *See*—
Milo, August, 4,460,013, Cl. 137-493.400.

University College Cardiff: *See*—
Jones, John C.; Pates, Anthony R.; Dewsberry, Roland; and Ryan, Paul A., 4,460,645, Cl. 428-323.000.

University of California, The Regents of the: *See*—
Somorjai, Gabor A.; and Leygraf, Christofer H., 4,460,443, Cl. 204-129.000.

University of Miami: *See*—
Fletcher, Mary A., 4,460,694, Cl. 436-531.000.

University of Southern California: *See*—
Tokes, Zoltan A.; Rogers, Kathryn E.; and Rembaum, Alan, 4,460,560, Cl. 424-1.100.

University of Toronto Innovations Foundation: *See*—
Rubin, Leon J.; Diosady, Levente L.; and Phillips, Colin R., 4,460,504, Cl. 260-123.500.

University of Utah, The: *See*—
Horak, Vaclav; and Janata, Jiri, 4,460,747, Cl. 525-197.000.

University Patents, Inc.: *See*—
Remers, William A., 4,460,599, Cl. 424-274.000.

Upjohn Company, The: *See*—
Chung, Shiau-Ta, 4,460,691, Cl. 435-235.000.
Kaplan, Lester J.; McMillan, Moses W.; and Szmuszkovicz, Jacob, 4,460,600, Cl. 424-274.000.
Lednicer, Daniel, 4,460,604, Cl. 424-330.000.
Wierenga, Wendell; and Skulnick, Harvey I., 4,460,589, Cl. 424-251.000.

Upton, Jenny: *See*—
Errede, Louis A.; Stoesz, James D.; and Upton, Jenny, 4,460,642, Cl. 428-283.000.

Urbach, Hans-Peter: *See*—
Aulich, Hubert; Eisenrith, Karl-Heinz; Schulze, Friedrich-Wilhelm; and Urbach, Hans-Peter, 4,460,556, Cl. 423-350.000.

Urban, Manfred: *See*—
Spietschka, Ernst; and Urban, Manfred, 4,460,410, Cl. 106-19.000.

USM Corporation: *See*—
O'Brien, Robert D.; and Schmecker, Elizabeth C., 4,459,726, Cl. 29-116.0AD.

Utagawa, Ken, to Nippon Kogaku K.K. Focus detecting device. 4,460,260, Cl. 354-406.000.

Uwai, Toshihiro: *See*—
Sato, Akihiro; Tachibana, Masami; Uwai, Toshihiro; Matsuda, Kenji; and Higuchi, Yoshiharu, 4,460,757, Cl. 526-114.000.

Valadez, Mario. Combination gauge-socket wrench. 4,459,716, Cl. 7-100.000.

Valange, Baudouin M., to Monsanto Company. Herbicidal concentrated emulsions. 4,460,406, Cl. 71-100.000.

Valeo: *See*—
Dauvergne, Jean L. R.; and Bertin, Patrice, 4,459,896, Cl. 91-375.00A.
Jaccod, Michel, 4,460,056, Cl. 180-53.700.

Valerius, Michael M., to Black, Sivalls & Bryson. Method and apparatus for reconcentrating liquid absorbent. 4,460,383, Cl. 55-32.000.

Van Appledorn, William, to Prince Corporation. Shot cylinder controller for die casting machines and the like. 4,460,324, Cl. 425-166.000.

van Bilzem, Jan F.; and van Staveren, Joannes, to Staat der Nederlanden (Staatsbedrijf der Posterijen, Telegrafie en Telefonie). Automatic handwritten and typewritten character-reading device. 4,461,029, Cl. 382-25.000.

Van Buskirk, Michael A.; and Holler, Mark A., to Intel Corporation. Virtual ground memory. 4,460,981, Cl. 365-189.000.

Van Der Hoek, Jan L.; and Blom, Bartholomeus W. M., to U.S. Philips Corporation. Stabilization ballast for operating a gas and/or vapor discharge lamp. 4,460,883, Cl. 336-65.000.

Vander Zanden, Robert J.: *See*—
Yang, Angel A.; and Vander Zanden, Robert J., 4,460,613, Cl. 426-601.000.

van Heek, Herman F.: *See—*
Waanders, Jan W.; van Heek, Herman F.; Colson, Roger A.; and Perduijn, David J., 4,460,842, Cl. 310-338.000.

Van Herwijnen, Gerardus: *See—*
Derks, Pierre L. L. M.; and Van Herwijnen, Gerardus, 4,460,619, Cl. 427-57.000.

Van Rheenen, Bernhard J. P.: *See—*
Hubner, Horst; Magendans, Frederik; and Van Rheenen, Bernhard J. P., 4,461,020, Cl. 378-143.000.

van Staveren, Joannes: *See—*
van Bilzem, Jan F.; and van Staveren, Joannes, 4,461,029, Cl. 382-25.000.

Van Steenwyk, Donald H.: *See—*
Watson, Fred L.; and Van Steenwyk, Donald H., 4,459,760, Cl. 33-312.000.

Van Syckle, Peter B.: *See—*
McKay, William F.; and Van Syckle, Peter B., 4,459,985, Cl. 128-303.00R.

Varian Associates, Inc.: *See—*
Taylor, Norman J., 4,460,846, Cl. 315-5.380.

Vasvari nee Debreczy, Lelle: *See—*
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermes, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari nee Debreczy, Lelle; and David, Agoston, 4,460,771, Cl. 544-282.000.

Veda Incorporated: *See—*
Moore, Walter T., 4,459,972, Cl. 126-424.000.

Vereinigte Aluminium-Werke Aktiengesellschaft: *See—*
Schultze, Werner; and Weber, Knut, Jr., 4,460,529, Cl. 264-81.000.

Verfahrenstechnik Dr.Ing.Kurt Baum: *See—*
Baum, Jorg P.; and Schaffer, Theodor, 4,460,389, Cl. 55-273.000.

Vermillion, Eugene F., to Columbus Show Case Company, The. Wall panel locking mechanism. 4,459,790, Cl. 52-764.000.

Vertut, Jean: *See—*
Moreau, Claude; Francois, Daniel; Vertut, Jean; Marchal, Paul; and Streiff, Gerard, 4,460,302, Cl. 414-5.000.

Vickers Limited: *See—*
Burchett, Clive J., 4,459,933, Cl. 114-297.000.

Victoreen, Inc.: *See—*
Malamud, Herbert; and Glasser, Herman, 4,460,833, Cl. 250-519.100.

Vidal, Jean L.: *See—*
Thiersault, Jean-Paul; Senez, Alain; and Vidal, Jean L., 4,460,750, Cl. 525-333.800.

Viero, Lawrence G.: *See—*
Lawler, Joseph A.; and Viero, Lawrence G., 4,460,332, Cl. 432-72.000.

Vignotto, Angelo: *See—*
Colanzi, Franco; and Vignotto, Angelo, 4,460,184, Cl. 277-35.000.

Vilcek, Jan T.; and Yip, Yum K., to New York University. Method of enhancing the production of human γ Interferon. 4,460,685, Cl. 435-70.000.

Villiger, Alois: *See—*
Petrzilka, Martin; Schadt, Martin; and Villiger, Alois, 4,460,770, Cl. 544-242.000.

Vincent, Denis M., to Minister of National Defense of Her Majesty's Canadian Government. Control system for an optical modulator. 4,460,249, Cl. 350-356.000.

Virag, Sandor: *See—*
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermes, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari nee Debreczy, Lelle; and David, Agoston, 4,460,771, Cl. 544-282.000.

Virginia Patent Development Corporation: *See—*
Bogese, Charles E., 4,460,234, Cl. 339-128.000.

Virtanen, Kalervo M. Device for regulating the power in electrical apparatuses, especially in fluorescent lighting fittings. 4,460,849, Cl. 315-209.00R.

Vivona, Joseph A.: *See—*
Cound, Cary D.; and Vivona, Joseph A., 4,459,906, Cl. 100-45.000.

Vlattas, Isidoros, to Ciba-Geigy Corporation. 5-Diazacycloalkylimidazo[1,2-c][1,3]benzodiazepines. 4,460,508, Cl. 260-245.600.

Vlattas, Isidoros, to Ciba-Geigy Corporation. 5-Diazacycloalkyl imidazo[1,2-c][1,3]benzodiazepines. 4,460,587, Cl. 424-250.000.

Vock, Manfred H.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,460,795, Cl. 568-446.000.

Voest-Alpine Aktiengesellschaft: *See—*
Wiesinger, Horst; Granitz, Fritz; Hargassner, Reinhard; and Bramberger, Hubert, 4,460,031, Cl. 164-150.000.

Vogt, Hartmut: *See—*
Schwesig, Gunter; Vogt, Hartmut; Voss, Erich; and Zander, Hans-Hermann, 4,460,860, Cl. 318-721.000.

Volkmann, Adolf P. E. Abutment member for use in driving studded metal fence posts. 4,459,729, Cl. 29-254.000.

Volleau, Patrick; Chaboche, Michel; and Bricot, Claude, to Thomson-CSF. Electrically controlled optical deflector. 4,460,252, Cl. 350-486.000.

Vorwerk & Co Interholding GmbH: *See—*
Ahlf, Heinz-Jurgen; Guhne, Wieland; and Fink, Bernd, deceased, 4,459,720, Cl. 15-398.000.

Voss, Erich: *See—*
Schwesig, Gunter; Vogt, Hartmut; Voss, Erich; and Zander, Hans-Hermann, 4,460,860, Cl. 318-721.000.

Voss, Karl-Heinz: *See—*
Kueenzle, Paul; and Voss, Karl-Heinz, 4,460,813, Cl. 200-146.00R.

W. Haking Enterprises, Ltd.: *See—*
Winter, Arthur J., 4,460,264, Cl. 354-419.000.

W-K-M Wellhead Systems, Inc.: *See—*
Knight, John W., 4,460,039, Cl. 166-80.000.

W. R. Grace & Co.: *See—*
Gaidis, James M.; and Rosenberg, Arnold M., 4,460,720, Cl. 524-5.000.

Waanders, Jan W.; van Heek, Herman F.; Colson, Roger A.; and Perduijn, David J., to U.S. Philips Corporation. Piezoelectric device with high, constant preload force. 4,460,842, Cl. 310-338.000.

WABCO Fahrzeugbremsen GmbH: *See—*
Pape, Klaus; and Ruhanu, Gerhard, 4,460,962, Cl. 364-426.000.
Petersen, Erwin, 4,460,220, Cl. 303-119.000.

Wacker-Chemie GmbH: *See—*
Huber, Peter; Kaufmann, Rudolf; and Burkhardt, Juurgen, 4,460,726, Cl. 524-114.000.
Schiller, August; and Dorsch, Norman, 4,460,761, Cl. 528-18.000.

Wacker, Holger: *See—*
Fock, Jurgen; Schedlitzki, Dietmar; and Wacker, Holger, 4,460,746, Cl. 525-117.000.

Wagner, Hali G.: *See—*
Huth, Stanley W.; and Wagner, Hali G., 4,460,573, Cl. 424-80.000.

Wahlstrom, Olle, to Billing, Lars. Rivet nail. 4,460,301, Cl. 411-449.000.

Wakita, Hiizu; and Uchida, Tadahiro, to Kabushiki Kaisha Kubota Seisakusho. Rotor for a centrifuge. 4,460,351, Cl. 494-16.000.

Walker, David L.: *See—*
Cox, Robert W.; Janikowski, Herbert E.; Walker, David L.; and Hands, David, 4,460,533, Cl. 264-236.000.

Walker, Wolfram H.: *See—*
Ganshirt, Karlheinz; Walker, Wolfram H.; and Schleussner, Hans, 4,460,365, Cl. 604-408.000.

Wallace, Robert P.: *See—*
Newton, Kenneth C.; Wallace, Robert P.; and Ohnell, Ernst, 4,460,233, Cl. 339-122.00R.

Wallin, Ralf: *See—*
Rydquist, Jan E.; Sandberg, Lars; and Wallin, Ralf, 4,459,808, Cl. 60-602.000.

Wallsten, Bruno C.: *See—*
Fahlstrom, Per A. H. H.; Back, Erik G.; Svemar, Sten C.; and Wallsten, Bruno C., 4,460,376, Cl. 44-1.00B.

Walser, Armin: *See—*
Field, George F.; Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,460,781, Cl. 548-356.000.

Walsh, Thomas C., to United Technologies Corporation. Compression section for an axial flow rotary machine. 4,460,309, Cl. 415-1.000.

Walter Hofmann Maschinenfabrik: *See—*
Hofmann, Walter, 4,460,127, Cl. 239-126.000.

Walter Sarstedt Kunststoff-Spritzgusswerk: *See—*
Sarstedt, Walter, 4,459,997, Cl. 128-764.000.

Walters, Ronald B., to Sperry Limited. Flow sensor with extended low flow range. 4,459,860, Cl. 73-861.550.

Wambach, Allen D.: *See—*
Kochanowski, John E.; and Wambach, Allen D., 4,460,731, Cl. 524-451.000.

Wampler, David, Jr.: *See—*
Fillmore, Francis L.; Wampler, David, Jr.; and Collins, Theodore H., 4,459,862, Cl. 73-862.010.

Wang, Ke-Chin: *See—*
Winkelbauer, Howard M.; Petrak, Daniel R.; Kleeb, Thomas R.; and Wang, Ke-Chin, 4,460,528, Cl. 264-65.000.

Ward, Ernest M.; Curry, Eugene L.; and Newton, Richard J. High peak power, high PRF laser system. 4,461,005, Cl. 372-10.000.

Warden, Gerald D.: *See—*
Guenther, Kenneth L.; Zemke, Edward H.; and Warden, Gerald D., 4,460,903, Cl. 346-75.000.

Warren, Larry M.: *See—*
Homan, Merle E.; Machol, Guenther K.; and Warren, Larry M., 4,460,972, Cl. 364-900.000.

Watabe, Keiji: *See—*
Kihara, Junji; Watabe, Keiji; Douya, Kouichi; Nakamura, Kazumoto; and Takeuchi, Shouzo, 4,459,842, Cl. 73-7.000.

Watai, Yuji; Kitamura, Toshiyuki; Hirayama, Yoshiyuki; Matsuura, Akira; and Yasui, Hirokazu, to Fuji Xerox Co., Ltd. Automatic exposure control for a photocopying machine. 4,460,270, Cl. 355-14.00E.

Watanabe, Kenjiro, to Sony Corporation. Optical information record member. 4,460,636, Cl. 428-212.000.

Watanabe, Kiyoshi: *See—*
Ohashi, Takehisa; Shimazaki, Masami; Nomura, Kenji; Nose, Yasushi; and Watanabe, Kiyoshi, 4,460,780, Cl. 548-201.000.

Watanabe, Masahiro: *See—*
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Hosokawa, Takehiko, 4,459,961, Cl. 123-491.000.

Watanabe, Yoshihiro: *See—*
Nishino, Atsushi; Sonetaka, Kazunori; Kimura, Kunio; and Watanabe, Yoshihiro, 4,460,630, Cl. 427-376.200.

Watanabe, Yoshinobu: *See—*
Miyamoto, Shigehiko; and Watanabe, Yoshinobu, 4,460,637, Cl. 428-212.000.

Watanabe, Yoshitsugu; and Koenuma, Katsutoshi, to J. Osawa Camera Sales Co., Ltd. Automatic mounting apparatus for chip components. 4,459,743, Cl. 29-740.000.

Watanaby, Takeaki, to Nissan Motor Co., Ltd. Rear side window demister. 4,459,901, Cl. 98-2.040.

Water Gremlin Company: *See—*
Ratte, Robert W., 4,459,775, Cl. 43-44.890.

Waterkamp, Manfred; and Kortenbrede, Ludger, to Aug. Winkhaus. Swiveling stirrup lock for a vehicle, particularly a two-wheel vehicle. 4,459,833, Cl. 70-227.000.

Watkins, Hugh: *See*—
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,460,795, Cl. 568-446.000.

Watson, Fred L.; and Van Steenwyk, Donald H., to Applied Technologies Associates. Apparatus and method to communicate information in a borehole. 4,459,760, Cl. 33-312.000.

Watson, James E., to North American Mfg. Company. Recuperator. 4,460,334, Cl. 432-223.000.

Watson, Keith G.: *See*—
Serban, Alexander; Watson, Keith G.; Wilshire, Colin; and Forsyth, Bruce A., 4,460,588, Cl. 424-251.000.

Wearne, Geoffrey L.: *See*—
Jones, Graham T.; Dow, Warren S.; and Wearne, Geoffrey L., 4,460,635, Cl. 428-142.000.

Weaver, Jimmie D., to Halliburton Company. Methods and hydrocarbon base treating fluids for stabilizing water sensitive clay containing formations. 4,460,483, Cl. 252-8.55R.

Weaver, Jimmie D.; Harris, Lawrence E.; and Harms, Weldon M., to Halliburton Company. Polymeric well treating method. 4,460,627, Cl. 427-212.000.

Weber, Knut, Jr.: *See*—
Schultze, Werner; and Weber, Knut, Jr., 4,460,529, Cl. 264-81.000.

Weber, Robert; Koppl, Alois; Forner, Siegfried; Kohlert, Erich; and Muller, Otto, to Kraftwerk Union Aktiengesellschaft. Automatically traveling tube-interior manipulator for remotely controlled transportation of testing devices and tools along given feedpaths, preferably for nuclear reactor installations. 4,460,920, Cl. 358-100.000.

Wedemeyer, Karlfried; Hagedorn, Ferdinand; and Evertz, Werner, to Bayer Aktiengesellschaft. Process for preparation of anilines which are m-substituted by chlorine. 4,460,788, Cl. 564-412.000.

Wehner, Dennis J.: *See*—
Cobb, William R.; and Wehner, Dennis J., 4,460,294, Cl. 405-290.000.

Weiger, Gunter; Schwerdt, Paul; and Hirn, Helmut, to Daimler-Benz Aktiengesellschaft. Temperature compensated piezoelectric actuator arrangement. 4,460,840, Cl. 310-328.000.

Weilbacher, Eugene E.; and Ransom, Dean A., to Snyder Laboratories, Inc. Closed wound suction evacuator. 4,460,354, Cl. 604-73.000.

Weintz, Richard, to Teves-Thompson GmbH. Liquid metal cooled internal combustion engine valves with getter. 4,459,949, Cl. 123-188.0GC.

Weisang, Francois: *See*—
Devalois, Serge; Hersant, Thierry; Goursat, Albert G.; and Weisang, Francois, 4,460,409, Cl. 75-96.000.

Weiss, Hermann; and Klotz, Erhard, to U.S. Philips Corporation. Method of and device for forming an image of a layer of a three-dimensional object. 4,461,016, Cl. 378-23.000.

Welker, Brian H., to Welker Engineering Company. Constant pressure cylinder with vortex mixer. 4,459,865, Cl. 73-864.620.

Welker Engineering Company: *See*—
Welker, Brian H., 4,459,865, Cl. 73-864.620.

Welschof, Hans-Heinrich; and Beier, Rudolf, to Lohr & Bromkamp GmbH. Bearing assembly for a wheel hub driven by a rotary constant velocity universal joint. 4,460,058, Cl. 180-258.000.

Welter, Andre: *See*—
Lautenschlager, Hans-Heiner; Welter, Andre; Hilboll, Gerd; Winkelmann, Johannes; Prop, Gerrit; Brekle, Axel; and Zierenberg, Ottfried, 4,460,598, Cl. 424-273.00R.

Wenk, Erich: *See*—
Koziol, Konrad; and Wenk, Erich, 4,460,450, Cl. 204-290.00F.

Wepplo, Peter J., to American Cyanamid Company. Process for the preparation of 6-substituted-2,3-pyridinedicarboxylic acid diesters. 4,460,776, Cl. 546-250.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See*—
Mariaux, Jacques; and Rossman, Rudolf, 4,459,725, Cl. 29-1.200.
Mori, Walter; and Wernli, Hans, 4,459,737, Cl. 29-568.000.

Werner & Pfleiderer: *See*—
Boden, Hellmut, 4,460,499, Cl. 252-628.000.

Wernli, Hans: *See*—
Mori, Walter; and Wernli, Hans, 4,459,737, Cl. 29-568.000.

Western Gear Machinery Co.: *See*—
Odell, Jack L., II; and Obear, Robert F., 4,459,783, Cl. 51-165.740.

Westfalia Separator AG: *See*—
Bruning, Paul, 4,460,352, Cl. 494-70.000.

Westinghouse Electric Corporation: *See*—
Benedict, Robert P.; and Beckman, Paul, 4,460,802, Cl. 136-230.000.
Funk, Charles E.; and Oneufer, Andrew S., 4,460,540, Cl. 376-327.000.
Gupta, Tapan K.; Carlson, William G.; and Sweetana, Andrew S., 4,460,497, Cl. 252-518.000.
Hansen, Irvin L.; McCormick, Leach S.; and Moore, Harold R., 4,460,885, Cl. 336-180.000.
Lyerly, Jack N., 4,460,209, Cl. 294-67.0BC.
Maskalick, Nicholas J., 4,460,444, Cl. 204-129.000.
Partington, Albert J., 4,460,316, Cl. 416-217.000.
Rosa, John, 4,460,861, Cl. 318-722.000.

Weststrate, Jan; and Staal, Ede M., to Intradal N.V. Anticariogenic remineralizing dentifrice. 4,460,565, Cl. 424-52.000.

Westvaco Corporation: *See*—
DeMarco, Richard E.; Hopkins, David; and McVicar, Walter D., 4,460,087, Cl. 206-415.000.
Force, Carlton G., 4,460,484, Cl. 252-8.55D.

Westwood, William D.: *See*—
Shepherd, Frank R.; and Westwood, William D., 4,459,739, Cl. 29-571.000.

Wheaton, Robert B.; Nelson, John A.; and Scherpereel, Donald E., to Whirlpool Corporation. Catalyzed wet oxidation process and catalyst useful therein. 4,460,628, Cl. 427-214.000.

Wheeler, Phillip L.: *See*—
Chan, Alexius C.; Wheeler, Phillip L.; and Chandler, Lloyd H., 4,460,945, Cl. 362-294.000.

Whelan, Robert C.: *See*—
Gratton, Arthur D.; McGhie, Terence V.; Whelan, Robert C.; and Peeters, Josephus B., 4,460,888, Cl. 337-290.000.

Whirlpool Corporation: *See*—
Wheaton, Robert B.; Nelson, John A.; and Scherpereel, Donald E., 4,460,628, Cl. 427-214.000.

Whitley, David A.: *See*—
Richardson, Paul; and Whitley, David A., 4,460,293, Cl. 405-133.000.

Wico Corporation: *See*—
Peters, Albin, 4,460,176, Cl. 273-127.00C.

Widmer, Dieter, to Spindel-, Motoren- und Maschinenfabrik AG. Percussion drill hammer. 4,460,051, Cl. 173-134.000.

Wierenga, Wendell; and Skulnick, Harvey I., to Upjohn Company, The. Process for treating hypertension. 4,460,589, Cl. 424-251.000.

Wiesinger, Horst; Granitz, Fritz; Hargassner, Reinhard; and Bramberger, Hubert, to Voest-Alpine Aktiengesellschaft. Arrangement for preventing slag from penetrating into a continuous casting mould during continuous casting. 4,460,031, Cl. 164-150.000.

Wietecha, Robert L.: *See*—
Rasmussen, Robert F.; Smida, George R.; Wietecha, Robert L.; and Pearson, Gary L., 4,460,200, Cl. 285-18.000.

Wigglesworth, Michael J.: *See*—
Adey, Anthony J.; Ritchie, Alistair J. F.; and Wigglesworth, Michael J., 4,459,955, Cl. 123-357.000.

Wilcox, Stanley W. Earth anchor. 4,459,787, Cl. 52-155.000.

Wild Heerbrugg Aktiengesellschaft: *See*—
Lippuner, Werner; and Muller, Ulrich, 4,459,757, Cl. 33-234.000.

Willey, Michael S.: *See*—
Kaya, Azmi; and Willey, Michael S., 4,459,818, Cl. 62-201.000.

William H. Rorer, Inc.: *See*—
Campbell, Henry F.; Scholz, Thomas H.; and Douglas, George H., 4,460,585, Cl. 424-249.000.

Williams, Bolie C., III; and Church, Richard M., Jr., to Cameron Iron Works, Inc. Annular blowout preventer. 4,460,151, Cl. 251-1.00B.

Williams, Bolie C., III: *See*—
Turlak, Robert J.; Williams, Bolie C., III; and Schaeper, Gary R., 4,460,150, Cl. 251-1.00B.

Williams, Gary H.; and Karol, Frederick J., to Union Carbide Corporation. Direct conversion of a polymerization reaction catalyzed by a Ziegler-type catalyst into one catalyzed by a chromium-based catalyst. 4,460,755, Cl. 526-84.000.

Williams, Kenneth R., to Aerojet-General Corporation. Lever operator for a valve control and actuating mechanism. 4,460,153, Cl. 251-99.000.

Williams Steel Industries, Inc.: *See*—
Eubanks, Robert H.; and Blankenship, Robert W., 4,459,734, Cl. 29-455.00R.

Williamson, Warren L.; Fathauer, George H.; and Mathis, Cecil E., to Masco Corporation of Indiana. Processor controlled scanning radio receiver. 4,461,036, Cl. 455-165.000.

Willis, William R., Sr. Snowplow attachment. 4,459,769, Cl. 37-275.000.

Willow Molded Plastics, Inc.: *See*—
Kessler, Ronald N.; Rose, June S.; and Ullman, Myron E., Jr., 4,460,095, Cl. 211-69.100.

Wilshire, Colin: *See*—
Serban, Alexander; Watson, Keith G.; Wilshire, Colin; and Forsyth, Bruce A., 4,460,588, Cl. 424-251.000.

Wilson, Larry L.: *See*—
Deckert, Clinton L.; Jenkins, Jon A.; and Wilson, Larry L., 4,460,353, Cl. 604-31.000.

Wilson, Richard C., to Tie Down Engineering, Inc. Can crusher. 4,459,905, Cl. 100-35.000.

Wilson, Terry L.: *See*—
Kurland, Marvin; Oliva, Ferdinand P.; and Wilson, Terry L., 4,459,927, Cl. 112-237.000.

Winchell, David F.: *See*—
Kerr, Howard A.; and Winchell, David F., 4,460,807, Cl. 179-18.0BC.

Windmoller & Holscher: *See*—
Feldkamper, Richard, 4,459,866, Cl. 74-69.000.

Winkelbauer, Howard M.; Petrak, Daniel R.; Kleeb, Thomas R.; and Wang, Ke-Chin, to Dresser Industries, Inc. Refractory. 4,460,528, Cl. 264-65.000.

Winkelmann, Johannes: *See*—
Lautenschlager, Hans-Heiner; Welter, Andre; Hilboll, Gerd; Winkelmann, Johannes; Prop, Gerrit; Brekle, Axel; and Zierenberg, Ottfried, 4,460,598, Cl. 424-273.00R.

Winter, Arthur J., to W. Haking Enterprises, Ltd. Electronic camera with automatic battery shutdown. 4,460,264, Cl. 354-419.000.

Winter, Karl, to CEAG Verfahrenstechnik GmbH. Adsorption filter with desorption device. 4,460,466, Cl. 210-274.000.

Winters, Robert P.: *See*—
Cook, Anthony; and Winters, Robert P., 4,460,165, Cl. 266-158.000.

Wirick, W. Raymond: *See*—
Coscia, Charles M.; and Wirick, W. Raymond, 4,460,429, Cl. 156-384.000.

Woicke, Bernd: *See*—
Mascher, Werner; Zloczysti, Stefan; Woicke, Bernd; and Haertle, Klaus, 4,459,981, Cl. 128-202.260.

Wojciechowski, Matthew P.: *See*—
Oszczakiewicz, Michael J.; Leising, Walter F.; and Wojciechowski, Matthew P., 4,460,904, Cl. 364-75.000.

Wolcott, Duane K., to Dow Chemical Company, The. Calibration unit for gases. 4,460,448, Cl. 204-266.000.

Wong, Patrick S.; Langston, Jimmy B.; and Leeper, Harold M., to ALZA Corporation. Device containing biocide producing paraformalde and an acid. 4,460,367, Cl. 604-890.000.

Wonsowicz, Casimir J., to Burroughs Corporation. Method for fabricating in-situ doped polysilicon employing overdamped gradually increasing gas flow rates with constant flow rate ratio. 4,460,416, Cl. 148-174.000.

Woo, Jong L.: *See*—
Park, Yeun H.; Woo, Jong L.; and Kim, Hak M., 4,460,649, Cl. 428-373.000.

Woodall, Jerry M.: *See*—
Chappell, Barbara A.; Chappell, Terry I.; and Woodall, Jerry M., 4,460,910, Cl. 357-22.000.

Woods, William E.: *See*—
Lemay, Richard A.; Stanley, Philip E.; Woods, William E.; and Cushing, David E., 4,460,959, Cl. 364-200.000.

Worschischek, Rainer: *See*—
Landgraf, Hermann; Schuss, Werner; and Worschischek, Rainer, 4,460,337, Cl. 433-29.000.

Worthington, Peter: *See*—
Parfree, Colin S.; and Worthington, Peter, 4,460,419, Cl. 156-56.000.

Woven Electronics Corporation: *See*—
Piper, Douglas E., 4,460,803, Cl. 174-36.000.

Wrightson, Robert W. Evaporative cooler pad assembly. 4,460,394, Cl. 55-491.000.

Wrightson, Robert W. Evaporative cooler water spreader. 4,460,520, Cl. 261-106.000.

Wu, Yulin, to Phillips Petroleum Company. Composition and method for corrosion inhibition. 4,460,482, Cl. 252-8.55E.

Xerox Corporation: *See*—
Badesha, Santokh S.; and Smith, Thomas W., 4,460,408, Cl. 75-0.50R.
Burnham, Robert D.; Streifer, William; and Scifres, Donald R., 4,461,007, Cl. 372-45.000.
Forrester, John A., 4,460,268, Cl. 355-8.000.
Gruber, Robert J.; Julien, Paul C.; Bolte, Steven B.; and Koch, Ronald J., 4,460,672, Cl. 430-110.000.
Oszczakiewicz, Michael J.; Leising, Walter F.; and Wojciechowski, Matthew P., 4,460,904, Cl. 364-75.000.

Xomox Corporation: *See*—
Smith, Russell G., 4,460,155, Cl. 251-144.000.

Yabrov, Alexander A. Prophylaxis or treatment of interferon-sensitive diseases. 4,460,574, Cl. 424-85.000.

Yamada, Fumiaki, to Nakamichi Corporation. Magnetic head with full and partial coils for azimuth information. 4,460,934, Cl. 360-12.300.

Yamada, Hirohide: *See*—
Hara, Hisao; and Yamada, Hirohide, 4,460,697, Cl. 501-87.000.

Yamada, Junzo; Mano, Tsuneo; and Inoue, Junichi, to Nippon Telegraph & Telephone Public Corporation. Semiconductor memory devices. 4,460,998, Cl. 371-10.000.

Yamada, Kuniharu; Gomi, Yoshiyuki; and Handa, Tsuneo, to Kabushiki Kaisha Suwa Seikosha. Condenser. 4,460,936, Cl. 361-305.000.

Yamada, Toshiaki, to Matsushita Electric Industrial Co., Ltd. Electromagnetic spring clutch. 4,460,076, Cl. 192-35.000.

Yamada, Yujiro: *See*—
Toyama, Hiromi; Nojiri, Chuhei; Shomura, Takashi; and Yamada, Yujiro, 4,460,693, Cl. 435-317.000.

Yamada, Yukifumi: *See*—
Kazaoka, Kenichi; and Yamada, Yukifumi, 4,460,144, Cl. 248-397.000.

Yamagami, Kozo, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor pressure sensor. 4,459,855, Cl. 73-727.000.

Yamaka Hatsudoki Kabushiki Kaisha: *See*—
Tobinaga, Motoi; and Nasuda, Yutaka, 4,459,951, Cl. 123-198.0DC.

Yamamoto, Kazuhiro: *See*—
Furukawa, Tadayasu; Taguchi, Tokuichi; Yamamoto, Kazuhiro; and Ohta, Shigenori, 4,460,615, Cl. 426-657.000.

Yamamoto, Makoto; Nakayama, Akira; and Iwata, Riso, to Nippon Zeon Co. Ltd. Process for producing vinyl chloride polymers in a coated reactor and coating product therefor. 4,460,753, Cl. 526-62.000.

Yamamoto, Shunichi: *See*—
Takashima, Hiroaki; Kato, Osamu; Uemura, Seiichi; Yamamoto, Shunichi; and Hirose, Takao, 4,460,557, Cl. 423-447.100.

Yamamoto, Soichi. Vertical abrasive roll rice polishing machine. 4,459,903, Cl. 99-519.000.

Yamamoto, Takaji: *See*—
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,460,648, Cl. 428-373.000.

Yamamoto, Takeshi: *See*—
Uehara, Masafumi; Yamamoto, Takeshi; Yamazaki, Atsuo; and Aoki, Tohru, 4,460,674, Cl. 430-190.000.

Yamamoto, Toshihiro: *See*—
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,460,648, Cl. 428-373.000.

Yamane, Satoshi: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, 4,460,256, Cl. 354-173.110.

Yamaoka, Nobutatsu; and Sasazawa, Kazuo, to Taiyo Yuden Co., Ltd. Electroconductive paste to be baked on ceramic bodies to provide capacitors, varistors or the like. 4,460,622, Cl. 427-79.000.

Yamasaki, Motoyoshi: *See*—
Haraga, Tetsuo; Nomura, Ryuji; Kai, Isao; and Yamasaki, Motoyoshi, 4,460,629, Cl. 427-221.000.

Yamashita, Junichi, to Hitachi, Ltd. Core construction of nuclear reactor. 4,460,538, Cl. 376-267.000.

Yamato, Akihiro; and Umesaki, Shigeo, to Honda Motor Co., Ltd. Method for controlling fuel supply to an internal combustion engine at deceleration. 4,459,962, Cl. 123-493.000.

Yamauchi, Shin-ichi: *See*—
Abe, Katsuhiro; Yamauchi, Shin-ichi; and Ohkubo, Akira, 4,460,743, Cl. 525-68.000.

Yamazaki, Atsuo: *See*—
Uehara, Masafumi; Yamamoto, Takeshi; Yamazaki, Atsuo; and Aoki, Tohru, 4,460,674, Cl. 430-190.000.

Yamazaki, Masaru; Miyashita, Kiyoshi; Kawazu, Hideyuki; and Ishimoto, Osamu, to Olympus Optical Company Limited. Automatic document feeder for use in combination with an electrophotographic copying machine. 4,460,269, Cl. 355-14.0SH.

Yamazaki, Mitsuo: *See*—
Naito, Atsushi; Nakagawa, Fumio; Okazaki, Takao; Terahara, Akira; Iwado, Seigo; and Yamazaki, Mitsuo, 4,460,765, Cl. 536-26.000.

Yamazaki, Shigetomo: *See*—
Onoguchi, Akira; and Yamazaki, Shigetomo, 4,460,827, Cl. 250-310.000.

Yanagida, Kazuhiro: *See*—
Iijima, Hiroshi; Moriya, Kunihiko; Tate, Kazuhito; Muroga, Goro; Yanagida, Kazuhiro; Nakamura, Yoshikazu; Inoue, Akiyoshi; and Higashi, Masahiro, 4,460,454, Cl. 208-40.000.
Moriya, Kunihiko; Tate, Kazuhito; Muroga, Goro; and Yanagida, Kazuhiro, 4,460,455, Cl. 208-40.000.

Yanai, Toshiaki; Jojima, Teruomi; Kawakubo, Katsuhiko; Honma, Toyokuni; and Shindo, Masahiro, to Sankyo Company, Limited. Herbicidal 5-aminoalkoxy-4-benzoyl-1,3-dimethyl-pyrazole derivatives. 4,460,597, Cl. 424-273.00P.

Yang, Angel A.; and Vander Zanden, Robert J., to Ralston Purina Company. Basal material for the preparation of tofu. 4,460,613, Cl. 426-601.000.

Yasuda, Kentaro; Saxer, Albert J.; and Cilderman, Janis J., to Otis Elevator Company. Method and apparatus for measuring interior sheave groove dimensions. 4,459,754, Cl. 33-137.00R.

Yasuda, Tokuro; and Oka, Akinori, to Oji Paper Co., Ltd. Press fixing type electrostatic recording material. 4,460,671, Cl. 430-98.000.

Yasui, Hirokazu: *See*—
Watai, Yuji; Kitamura, Toshiyuki; Hirayama, Yoshiyuki; Matsuura, Akira; and Yasui, Hirokazu, 4,460,270, Cl. 355-14.00E.

Yatsuda, Yuji: *See*—
Hagiwara, Takaaki; Itoh, Yokichi; Kondo, Ryuji; Yatsuda, Yuji; and Minami, Shinichi, 4,460,980, Cl. 365-184.000.

Yen, Mei-Rong: *See*—
Yu, Terry T.; and Yen, Mei-Rong, 4,460,678, Cl. 430-346.000.

Yip, Yum K.: *See*—
Vilcek, Jan T.; and Yip, Yum K., 4,460,685, Cl. 435-70.000.

Yokko, Masao: *See*—
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,459,953, Cl. 123-198.00F.

Yokoyama, Seishi, to Mitsubishi Denki Kabushiki Kaisha. Air conditioner. 4,459,815, Cl. 62-180.000.

Yokoyama, Shoji: *See*—
Miki, Nobuaki; and Yokoyama, Shoji, 4,459,879, Cl. 74-867.000.

Yonishi, Satoshi: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Kada, Satoshi; and Hashimoto, Masashi, 4,460,502, Cl. 260-112.50R.

Yoshida, Chosaku: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,460,774, Cl. 544-366.000.

Yoshida Kogyo K. K.: *See*—
Oyama, Yoshio, 4,460,083, Cl. 198-486.000.
Takano, Shinji; and Horita, Yoshiyuki, 4,459,723, Cl. 24-434.000.
Yoshieda, Keiichi; and Morita, Toyoo, 4,459,884, Cl. 83-42.000.

Yoshida, Masazumi; Noda, Tadao; and Inoue, Masayoshi, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying method. 4,460,668, Cl. 430-31.000.

Yoshida, Satoshi, to Japan Organo Co., Ltd. Electromagnetic filter. 4,460,463, Cl. 210-222.000.

Yoshieda, Keiichi; and Morita, Toyoo, to Yoshida Kogyo K. K. Method of and apparatus for processing a pair of slide fastener stringers. 4,459,884, Cl. 83-42.000.

Yoshimi, Akiro; Takemi, Akio; and Suzuki, Kazuyoshi, to Nippondenso Co., Ltd. Multizone air-conditioning system for motor vehicles. 4,460,036, Cl. 165-12.000.

Yoshimura, Tooru: *See*—
Makajima, Yasuo; Hayashi, Yoshimasa; and Yoshimura, Tooru, 4,459,804, Cl. 60-274.000.

Yoshioka, Masahiro; and Takeda, Kazuo, to Hitachi, Ltd. Damped bearing device. 4,460,283, Cl. 384-119.000.

Young, Howard L.: *See*—
Derby, Robert L.; Hall, Richard H.; and Young, Howard L., 4,460,572, Cl. 424-78.000.

Young, Peter L.: *See*—
Josepha, Richard M.; Flowers, Ronald A.; and Young, Peter L., 4,459,823, Cl. 62-268.000.

Young, William R., to Harris Corporation. ROM/PLA Structure and method of testing. 4,461,000, Cl. 371-21.000.

Yu, Terry T.; and Yen, Mei-Rong, to Energy Conversion Devices, Inc. Tellurium imaging composition including improved reductant precursor and method. 4,460,678, Cl. 430-346.000.

Zacharkow, Stanley W.; and Morgan, William D., to Transamerica DeLaval, Inc. Filter/demineralizer unit. 4,460,465, Cl. 210-266.000.

Zahnradfabrik Friedrichshafen, AG: *See*—
Mann, Egon; and Eymuller, Helmut, 4,459,875, Cl. 74-785.000.

Zahnradfabrik Friedrichshafen, A.G.: *See*—
Bucksch, Manfred, 4,459,869, Cl. 74-467.000.

Zakrzewski, Erhard, to Steuler Industriewerke, G.m.b.H. Process for the separation of air components, such as difficultly absorbable air impurities, out of air-gas mixtures. 4,460,552, Cl. 423-210.000.

Zander, Hans-Hermann: *See*—
Schwesig, Gunter; Vogt, Hartmut; Voss, Erich; and Zander, Hans-Hermann, 4,460,860, Cl. 318-721.000.

Zboray, James A.: *See*—
Baumann, George P.; and Zboray, James A., 4,460,130, Cl. 239-559.000.

Zell, Peter E.: *See*—
Barron, William R.; and Zell, Peter E., 4,460,387, Cl. 55-192.000.

Zemke, Edward H.: *See*—
Guenther, Kenneth L.; Zemke, Edward H.; and Warden, Gerald D., 4,460,903, Cl. 346-75.000.

Zenger, Richard D., to National Can Corporation. Composite container constructioe. 4,459,793, Cl. 53-434.000.

Zenith Electronics Corporation: *See*—
Ensinger, James W.; and Hendrickson, Melvin C., 4,460,922, Cl. 358-122.000.
Flasza, Michael D., 4,460,918, Cl. 358-21.00R.

Zenith Radio Corporation: *See*—
DeVries, Adrian J., 4,460,995, Cl. 310-313.00R.
Dobrovolny, Pierre, 4,461,040, Cl. 455-327.000.
Dobrovolny, Pierre, 4,461,041, Cl. 455-328.000.
Skerlos, Peter C., 4,461,032, Cl. 455-4.000.

Zientek, Eugene A.: *See*—
Mohr, Paul H.; and Zientek, Eugene A., 4,460,478, Cl. 252-75.000.

Zierenberg, Ottfried: *See*—
Lautenschlager, Hans-Heiner; Welter, Andre; Hilboll, Gerd; Winkelmann, Johannes; Prop, Gerrit; Brckle, Axel; and Zierenberg, Ottfried, 4,460,598, Cl. 424-273.00R.

Ziliani, Franco, to Norda Tubazioni S.p.A. Folding clothes stand structure. 4,460,112, Cl. 223-88.000.

Zimmer, Robert E., to Buehler Ltd. Chuck for vertically hung specimen holder. 4,459,785, Cl. 51-237.00R.

Zimmermann, Markus: *See*—
Ostermayer, Franz; and Zimmermann, Markus, 4,460,580, Cl. 424-232.000.

Zink, Randolph L.: *See*—
Hassan, Awatif E.; Haddock, William H.; and Zink, Randolph L., 4,459,924, Cl. 111-2.000.

Zloczysti, Stefan: *See*—
Mascher, Werner; Zloczysti, Stefan; Woicke, Bernd; and Haertle, Klaus, 4,459,981, Cl. 128-202.260.

Zwiercan, Gary A.: *See*—
Barndt, Richard L.; Zwiercan, Gary A.; and Trubiano, Paolo C., 4,460,617, Cl. 426-609.000.

Zwirlein, John F.: *See*—
Gates, William J.; and Zwirlein, John F., 4,460,126, Cl. 239-112.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF JULY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allflex International Limited: *See*—
Murphy, Brian E.; and Burford, John R., Re. 31,632, Cl. 40-301.000.

Beehive Machinery, Inc.: *See*—
McFarlard, Archie R., Re. 31,631, Cl. 241-74.000.

Burford, John R.: *See*—
Murphy, Brian E.; and Burford, John R., Re. 31,632, Cl. 40-301.000.

Goto, Eiichi; Souma, Takashi; Idesawa, Masanori; and Tanaka, Kazumitsu, to Rikagaku Kenkyusho; and Nihon Denshi Kabushiki Kaisha. Electron beam exposure system. Re. 31,630, Cl. 250-492.200.

Idesawa, Masanori: *See*—
Goto, Eiichi; Souma, Takashi; Idesawa, Masanori; and Tanaka, Kazumitsu, Re. 31,630, Cl. 250-492.200.

McFarlard, Archie R., to Beehive Machinery, Inc. Apparatus for producing de-boned meat products. Re. 31,631, Cl. 241-74.000.

Murphy, Brian E.; and Burford, John R., to Allflex International Limited. Animal ear tags and applicators therefor. Re. 31,632, Cl. 40-301.000.

Nihon Denshi Kabushiki Kaisha: *See*—
Goto, Eiichi; Souma, Takashi; Idesawa, Masanori; and Tanaka, Kazumitsu, Re. 31,630, Cl. 250-492.200.

Rikagaku Kenkyusho: *See*—
Goto, Eiichi; Souma, Takashi; Idesawa, Masanori; and Tanaka, Kazumitsu, Re. 31,630, Cl. 250-492.200.

Souma, Takashi: *See*—
Goto, Eiichi; Souma, Takashi; Idesawa, Masanori; and Tanaka, Kazumitsu, Re. 31,630, Cl. 250-492.200.

Tanaka, Kazumitsu: *See*—
Goto, Eiichi; Souma, Takashi; Idesawa, Masanori; and Tanaka, Kazumitsu, Re. 31,630, Cl. 250-492.200.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Aktiebolaget Hassle: *See*—
Berntsson, Peder B.; Carlsson, Stig A. I.; Gaarder, Jan O ; and Ljung, Bengt R., B1 4,264,611, Cl. 424-266.000.

American Hospital Supply Corp.: *See*—
Wappler, Reinhold D., B1 3,752,159, Cl. 128-303.150.

Barth, Gunter; and Von Langsdorff, Fritz, to F. Von Langsdorff Bauverfahren GmbH. Slab-elements for covering the ground. B1 4,128,357, 7-17-84, Cl. 404-41.000.

Berntsson, Peder B.; Carlsson, Stig A. I.; Gaarder, Jan O ; and Ljung, Bengt R., to Aktiebolaget Hassle. 2,6-Dimethyl-4-2,3-disubstituted phenyl-1,4-dihydro-pyridine-3,5-dicarboxylic acid-3,5-asymmetric diesters having hypotensive properties, as well as method for treating hypertensive conditions and pharmaceutical preparations containing same. B1 4,264,611, 7-17-84, Cl. 424-266.000.

Boxall, Frank S. Central office switching system with remote line switch. B1 4,038,498, 7-17-84, Cl. 179-18.0FC.

Carlsson, Stig A. I.: *See*—
Berntsson, Peder B.; Carlsson, Stig A. I.; Gaarder, Jan O ; and Ljung, Bengt R., B1 4,264,611, Cl. 424-266.000.

F. Von Langsdorff Bauverfahren GmbH: *See*—
Barth, Gunter; and Von Langsdorff, Fritz, B1 4,128,357, Cl. 404-41.000.

Gaarder, Jan O : *See*—
Berntsson, Peder B.; Carlsson, Stig A. I.; Gaarder, Jan O ; and Ljung, Bengt R., B1 4,264,611, Cl. 424-266.000.

Julian, Kenneth A.: *See*—
Julian, Victor J.; and Julian, Kenneth A., B1 4,049,335, Cl. 339-224.000.

Julian, Victor J.; and Julian, Kenneth A. Sealed battery threaded stud termination. B1 4,049,335, 7-17-84, Cl. 339-224.000.

Ljung, Bengt R.: *See*—
Berntsson, Peder B.; Carlsson, Stig A. I.; Gaarder, Jan O ; and Ljung, Bengt R., B1 4,264,611, Cl. 424-266.000.

Rhone-Poulenc Agrochemie: *See*—
Theissen, Robert J., B1 3,941,830, Cl. 560-21.000.

Roberts, Glenn M. Coin handling apparatus for a vending machine. B1 4,375,255, 7-17-84, Cl. 194-1.00G.

Theissen, Robert J., to Rhone-Poulenc Agrochemie. Substituted phenoxybenzoic acids and esters thereof. B1 3,941,830, 7-17-84, Cl. 560-21.000.

Von Langsdorff, Fritz: *See*—
Barth, Gunter; and Von Langsdorff, Fritz, B1 4,128,357, Cl. 404-41.000.

Wappler, Reinhold D., to American Hospital Supply Corp. Resectoscope cutting electrode. B1 3,752,159, 7-17-84, Cl. 128-303.150.

LIST OF DESIGN PATENTEES

A.C.C. Air Clean Co.: *See*—
Aberg, Roland, 274,748, Cl. D23-151.000.

Aberg, Roland, to A.C.C. Air Clean Co. Fume ventilating work station for laboratories. 274,748, 7-17-84, Cl. D23-151.000.

Allen, James H., to 'totes', incorporated. Umbrella handle. 274,674, 7-17-84, Cl. D3-12.000.

Amba Marketing Systems Inc.: *See*—
Vogel, Bruce C., 274,703, Cl. D10-15.000.

Ambler, Keith S. Barbeque grill. 274,686, 7-17-84, Cl. D7-337.000.

American Standard, Inc.: *See*—
Kaiser, Jack N., 274,747, Cl. D23-51.000.

AMF Incorporated: *See*—
Hall, Harleston J., Jr.; Yuhas, Drew J.; Duggan, Frank J.; Johnson, Thomas; and Witte, Paul A., 274,741, Cl. D21-212.000.

AMP Incorporated: *See*—
Casciotti, Albert; and Hollyday, Robert D., 274,719, Cl. D13-24.000.

Anderson, John C.: *See*—
Sun, Lilla S.; and Anderson, John C., 274,700, Cl. D9-435.000.

Angelakos, Nicholas P., to Lancaster Colony Corporation. Drinking glass. 274,683, 7-17-84, Cl. D7-15.000.

Armstrong, Beverly W. Middle ear ventilation tube. 274,753, 7-17-84, Cl. D24-34.000.

Baker, Olin H.; and Reilly, Robert P., to Meese, Inc. Quill can. 274,763, 7-17-84, Cl. D34-43.000.

Baumgardner, H. Richard, to Firestone Tire & Rubber Co., The. Tire tread and buttress. 274,715, 7-17-84, Cl. D12-147.000.

Baxter Travenol Laboratories, Inc.: *See*—
Brown, Richard I.; and Gordon, William, 274,751, Cl. D24-1.100.

Beaty, John E., Sr. One-piece dome ceiling with lip. 274,757, 7-17-84, Cl. D25-58.000.

Beckman Instruments, Inc.: *See*—
Sun, Lilla S.; and Anderson, John C., 274,700, Cl. D9-435.000.

Bell Telephone Laboratories, Incorporated: *See—*
Genaro, Donald M.; and Lemke, Gilbert C., 274,724, Cl. D14-53.000.
Girardi, Joseph; and Sylvester, Gordon E., 274,731, Cl. D14-114.000.

Bench Ad Company: *See—*
Groman, Stanton H.; and Hisel, Robert K., 274,678, Cl. D6-370.000.

Brown, Richard I.; and Gordon, William, to Baxter Travenol Laboratories, Inc. Plasmapheresis and fluid exchange device. 274,751, 7-17-84, Cl. D24-1.100.

Bulgari, Marina, to Zoldia Anstalt. Neckiace. 274,708, 7-17-84, Cl. D11-3.000.

Bulgari, Marina, to Zoldia Anstalt. Earring ornament. 274,709, 7-17-84, Cl. D11-43.000.

Burrill, Leighton, to Chem-Nuclear Systems, Inc. Closure for a container for chemical and radioactive waste. 274,701, 7-17-84, Cl. D9-439.000.

Burruss, Harrison N. Safety flush valve fitting for automotive air conditioner. 274,746, 7-17-84, Cl. D23-21.000.

Byrne, David S., to Warner-Lambert Company. Pregnancy diagnostic apparatus. 274,752, 7-17-84, Cl. D24-8.000.

Cardinal Industries, Inc.: *See—*
Marty, Keith E.; and Strayer, Martin F., 274,755, Cl. D25-22.000.
Marty, Keith E.; and Strayer, Martin F., 274,756, Cl. D25-22.000.

Caruth, John. Solid body acoustic guitar. 274,735, 7-17-84, Cl. D17-19.000.

Casciotti, Albert; and Hollyday, Robert D., to AMP Incorporated. Multi terminal electrical connector plug. 274,719, 7-17-84, Cl. D13-24.000.

Caven, Terence T., to Plessey Overseas Limited. Visual display unit. 274,726, 7-17-84, Cl. D14-113.000.

Cesaroni, William C., to Dart Industries Inc. Knob. 274,690, 7-17-84, Cl. D8-310.000.

Chem-Nuclear Systems, Inc.: *See—*
Burrill, Leighton, 274,701, Cl. D9-439.000.

Chernack, Milton P., to Extracorporeal Medical Specialties, Inc. Port cap for medical apparatus. 274,754, 7-17-84, Cl. D24-56.000.

Ciganko, David J.; and Veness, Mary E., to Quaker Oats Company, The. Toy rattle. 274,737, 7-17-84, Cl. D21-65.000.

Clarence J. Venne Inc.: *See—*
Venne, Clarence J., 274,697, Cl. D9-352.000.

Cone, Richard E., to Questor Corporation. Stroller. 274,714, 7-17-84, Cl. D12-129.000.

Couture, George. Ice skate. 274,742, 7-17-84, Cl. D21-225.000.

Cruz, Joseph P., to DRG Inc. Container for sausage-shaped articles. 274,693, 7-17-84, Cl. D9-341.000.

Dart Industries Inc.: *See—*
Cesaroni, William C., 274,690, Cl. D8-310.000.

David, Fred A. Combined bottle, chain and support base. 274,692, 7-17-84, Cl. D9-309.000.

Denhoff, Donald P., to Sewell Plastics, Inc. Bottle or the like. 274,694, 7-17-84, Cl. D9-350.000.

Dickie, Robert G., to Northern Technologies, Ltd. Electrical connector cover. 274,718, 7-17-84, Cl. D13-24.000.

Diffrient, Niels, to Hauserman Inc., Int. Furniture & Tex Div. Chair. 274,675, 7-17-84, Cl. D6-366.000.

DRG Inc.: *See—*
Cruz, Joseph P., 274,693, Cl. D9-341.000.

Duggan, Frank J.: *See—*
Hall, Harleston J., Jr.; Yuhas, Drew J.; Duggan, Frank J.; Johnson, Thomas; and Witte, Paul A., 274,741, Cl. D21-212.000.

Epperson, Charles N., to Invention Development Equity Associates, Inc. Nestable container for liquids. 274,698, 7-17-84, Cl. D9-370.000.

Epperson, Charles N., to Invention Development Equity Associates, Inc. Nestable container for liquid products. 274,699, 7-17-84, Cl. D9-370.000.

Escalante, Frank A. Pull tab can opener. 274,688, 7-17-84, Cl. D8-40.000.

Extracorporeal Medical Specialties, Inc.: *See—*
Chernack, Milton P., 274,754, Cl. D24-56.000.

Firestone Tire & Rubber Co., The: *See—*
Baumgardner, H. Richard, 274,715, Cl. D12-147.000.

French, Ernest. Casing for a signaling device or similar article. 274,707, 7-17-84, Cl. D10-104.000.

Garrett, Charles L.; and Podhrasky, Robert J., to Garrett Electronics. Metal detector. 274,704, 7-17-84, Cl. D10-47.000.

Garrett Electronics: *See—*
Garrett, Charles L.; and Podhrasky, Robert J., 274,704, Cl. D10-47.000.

Garrett, Patricia W. Shoe. 274,672, 7-17-84, Cl. D2-278.000.

Genaro, Donald M.; and Lemke, Gilbert C., to Bell Telephone Laboratories, Incorporated. Housing for a telephone. 274,724, 7-17-84, Cl. D14-53.000.

George Fischer Ltd.: *See—*
Mahnig, Fritz, 274,716, Cl. D12-207.000.

Girardi, Joseph; and Sylvester, Gordon E., to Bell Telephone Laboratories, Incorporated. Cartridge for a printed circuit board or similar article. 274,731, 7-17-84, Cl. D14-114.000.

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Groman, Stanton H.; and Hisel, Robert K., to Bench Ad Company. Bench. 274,678, 7-17-84, Cl. D6-370.000.

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Gwathmey, Charles; and Siegel, Robert, to Knoll International, Inc. Desk. 274,681, 7-17-84, Cl. D6-428.000.

Hall, Harleston J., Jr.; Yuhas, Drew J.; Duggan, Frank J.; Johnson, Thomas; and Witte, Paul A., to AMF Incorporated. Game ball racket. 274,741, 7-17-84, Cl. D21-212.000.

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Hovey, Dean A.; Sachs, James; Kelley, David M.; Grundstrom, Douglas R.; and Yurchenco, James R., to Trace Systems, Inc. Home computer housing and display support. 274,730, 7-17-84, Cl. D14-114.000.

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Epperson, Charles N., 274,699, Cl. D9-370.000.

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Lyle, John. Undergarment. 274,669, 7-17-84, Cl. D2-1.000.

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Marsden, John G., to Integral Company, The. Combined bottle and pouring spout. 274,696, 7-17-84, Cl. D9-352.000.
Marty, Keith E.; and Strayer, Martin F., to Cardinal Industries, Inc. Apartment building. 274,755, 7-17-84, Cl. D25-22.000.
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Morioka, Minoru; and Ogishima, Tetuo, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 274,713, 7-17-84, Cl. D12-110.000.
Nagode, Larry R., to Quaker Oats Company, The. Toy trunk. 274,739, 7-17-84, Cl. D21-121.000.
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Shewchuck, Donald. Ice skate guard. 274,743, 7-17-84, Cl. D21-225.000.
Shibata, Mikio, to Tokyo Shibaura Denki Kabushiki Kaisha. Data display unit for electronic computers. 274,727, 7-17-84, Cl. D14-113.000.
Shibata, Mikio, to Tokyo Shibaura Denki Kabushiki Kaisha. Display unit for electronic computers. 274,728, 7-17-84, Cl. D14-113.000.
Shing, Shiu. Combined head lamp and battery pack therefor. 274,758, 7-17-84, Cl. D26-39.000.
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Smith, Jeanette J. Disposable plastic combined apron, leg and foot cover. 274,670, 7-17-84, Cl. D2-29.000.
Smith, Thomas J., to TII Industries, Inc. Protector housing for telecommunications equipment or the like. 274,721, 7-17-84, Cl. D13-40.000.
Smithers, Michael N. Strength-building swim paddle. 274,744, 7-17-84, Cl. D21-239.000.
Sowle, Harry A. Guitar or similar instrument. 274,734, 7-17-84, Cl. D17-14.000.
Starks, Kerry. Dental floss holder. 274,759, 7-17-84, Cl. D28-64.000.
Stehlik, Richard C. Cot. 274,679, 7-17-84, Cl. D6-392.000.
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Marty, Keith E.; and Strayer, Martin F., 274,756, Cl. D25-22.000.
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Sun, George C. Transparent ornament with mice and mushrooms. 274,711, 7-17-84, Cl. D11-134.000.
Sun, George C. Transparent ornament with butterflies and flowers. 274,712, 7-17-84, Cl. D11-135.000.
Sun, Lilla S.; and Anderson, John C., to Beckman Instruments, Inc. Cover for a packaging tray. 274,700, 7-17-84, Cl. D9-435.000.
Sunbeam Corporation: *See*—
Tynes, Albert L., 274,706, Cl. D10-92.000.
Sussman, Howard. Organizer cabinet housing for men's toiletry items. 274,680, 7-17-84, Cl. D6-530.000.
Sylvester, Gordon E.: *See*—
Girardi, Joseph; and Sylvester, Gordon E., 274,731, Cl. D14-114.000.
Taylor, Shelton E. Evaporator for an automotive air conditioner. 274,750, 7-17-84, Cl. D23-163.000.
TDS, Inc.: *See*—
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TII Industries, Inc.: *See*—
Smith, Thomas J., 274,721, Cl. D13-40.000.
Toffolon, Roger L. Lifting device. 274,762, 7-17-84, Cl. D34-33.000.
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Izaki, Kenzou, 274,725, Cl. D14-100.000.
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Shibata, Mikio, 274,728, Cl. D14-113.000.
Tomy Corporation: *See*—
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'totes', incorporated: *See*—
Allen, James H., 274,674, Cl. D3-12.000.
Trace Systems, Inc.: *See*—
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Hovey, Dean A.; Sachs, James; Kelley, David M.; Grundstrom, Douglas R.; and Yurchenco, James R., 274,730, Cl. D14-114.000.
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Veness, Mary E.: *See*—
Ciganko, David J.; and Veness, Mary E., 274,737, Cl. D21-65.000.
Venne, Clarence J., to Clarence J. Venne Inc. Ink applicator bottle. 274,697, 7-17-84, Cl. D9-352.000.
Vogel, Bruce C., to Amba Marketing Systems Inc. Digital clock. 274,703, 7-17-84, Cl. D10-15.000.
Wallace, Robert S. Snap-lock holder. 274,691, 7-17-84, Cl. D8-336.000.
Want, Alexander, to Lazere Financial Corporation. Filter cartridge. 274,745, 7-17-84, Cl. D23-4.000.
Warner-Lambert Company: *See*—
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Weiner, Winn. Chair. 274,677, 7-17-84, Cl. D6-363.000.
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Hall, Harleston J., Jr.; Yuhas, Drew J.; Duggan, Frank J.; Johnson, Thomas; and Witte, Paul A., 274,741, Cl. D21-212.000.
Yurchenco, James R.: *See*—
Hovey, Dean A.; Sachs, James; Kelley, David M.; Grundstrom, Douglas R.; and Yurchenco, James R., 274,730, Cl. D14-114.000.
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Bennett, Cecilia L. D. Miniature rose plant. 5,259, 7-17-84, Cl. 10.000.
Bennett, Cecilia L. D. Miniature rose plant. 5,260, 7-17-84, Cl. 8.000.
Carrier, Leonard E. Carnation plant. 5,258, 7-17-84, Cl. 70.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 17, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

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651	4,459,810

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183	4,459,816
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201	4,459,818
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606	4,459,852
626	4,459,853
644	4,459,854
727	4,459,855
754	4,459,856
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861.55	4,459,860
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813 L	4,459,877
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867	4,459,891
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519	4,459,903

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118	4,459,907
218	4,459,908
295	4,459,909

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269	4,459,912
415.1	4,459,913

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CLASS 105

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169	4,459,919

CLASS 106

19	4,460,410
183	4,460,411

CLASS 108

107	4,459,920

CLASS 110

226	4,459,921
265	4,459,922
346	4,459,923

CLASS 111

2	4,459,924

CLASS 112

70	4,459,925
121.12	4,459,926
237	4,459,927
268.1	4,459,928

CLASS 114

74 A	4,459,929
230	4,459,930
	4,459,931
270	4,459,932
297	4,459,933
304	4,459,934
340	4,459,935

CLASS 116

207	4,459,936

CLASS 118

50.1	4,459,937

CLASS 119

14.49	4,459,938
	4,459,939
14.54	4,459,940
103	4,459,941
159	4,459,942

CLASS 123

25 J	4,459,943
41.66	4,459,944
56 C	4,459,945
90.16	4,459,946
90.27	4,459,947
145 A	4,459,948
188 GC	4,459,949
195 A	4,459,950
198 DC	4,459,951
198 F	4,459,952
	4,459,953
350	4,459,954
357	4,459,955
373	4,459,956
387	4,459,957
425	4,459,958
446	4,459,959
481	4,459,960
491	4,459,961
493	4,459,962
506	4,459,963
569	4,459,964
571	4,459,965
573	4,459,966
634	4,459,967
643	4,459,968

CLASS 125

11 AT	4,459,969

CLASS 126

415	4,459,970
417	4,459,971
424	4,459,972
431	4,459,973
440	4,459,974
449	4,459,975
	4,459,976

CLASS 128

1 D	4,459,977
20	4,459,978
78	4,459,979
80 E	4,459,980
202.26	4,459,981
204.23	4,459,982
205.24	4,459,983
207.15	4,459,984
303 R	4,459,985
303.1	4,459,986
303.15	B1 3,752,159
355	4,459,987
419 F	4,459,988
421	4,459,989
656	4,459,990
681	4,459,991
687	4,459,992
706	4,459,993
719	4,459,994
734	4,459,995
746	4,459,996
764	4,459,997

CLASS 131

62	4,459,998
109 R	4,459,999
296	4,460,000
338	4,460,001

CLASS 132

91	4,460,002

CLASS 133

1 R	4,460,003
8 R	4,460,004

CLASS 134

104	4,460,005

CLASS 136

230	4,460,802

CLASS 137

62	4,460,006
79	4,460,007
93	4,460,008
243.6	4,460,009
259	4,460,010
375	4,460,011
454.6	4,460,012
493.4	4,460,013
614.18	4,460,014
625.24	4,460,016
625.43	4,460,017
625.5	4,460,015
807	4,460,018

CLASS 138

90	4,460,019

CLASS 139

82	4,460,020
185	4,460,021
369	4,460,022
383 A	4,460,023

CLASS 140

93 R	4,460,024

CLASS 141

1	4,460,025
	4,460,026

CLASS 144

194	4,460,027
366	4,460,028

CLASS 148

1.5	4,460,412
	4,460,413
16.6	4,460,415
23	4,460,414
174	4,460,416
187	4,460,417
437	4,460,418

CLASS 152

359	4,460,029

CLASS 156

56	4,460,419
64	4,460,420
	4,460,421
175	4,460,422
185	4,460,423
242	4,460,424
244.23	4,460,425
277	4,460,426
303	4,460,427
360	4,460,428
384	4,460,429
504	4,460,430
515	4,460,431
567	4,460,432
574	4,460,433
643	4,460,434
	4,460,435
	4,460,436

CLASS 160

35	4,460,030

CLASS 164

150	4,460,031

195 4,460,032
454 4,460,033
478 4,460,034

CLASS 165

12 4,460,035
4,460,036
76 4,460,037
151 4,459,917

CLASS 166

66 4,460,038
80 4,460,039
129 4,460,040
134 4,460,041
217 4,460,042
246 4,460,043
252 4,460,044
278 4,460,045
317 4,460,046
341 4,460,047
375 4,460,048

CLASS 170

486 4,459,835

CLASS 173

93.5 4,460,049
128 4,460,050
134 4,460,051

CLASS 174

36 4,460,803
117 A 4,460,804
152 G 4,460,805

CLASS 175

72 4,460,052
329 4,460,053

CLASS 177

149 4,460,054

CLASS 179

18 BC 4,460,807
18 EB 4,460,806
18 FC B1 4,038,498
84 VF 4,460,808
113 4,460,809

CLASS 180

7.1 4,460,055
53.7 4,460,056
230 4,460,057
258 4,460,058

CLASS 181

102 4,460,059
169 4,460,060
175 4,460,061

CLASS 182

48 4,460,062
116 4,460,063

CLASS 187

9 R 4,460,064
29 R 4,460,065
4,460,066

CLASS 188

1.11 4,460,067
71.8 4,460,068
72.7 4,460,069
73.1 4,460,070
73.39 4,460,071
77 R 4,460,072
322.13 4,460,073
322.14 4,460,074

CLASS 192

18 A 4,460,075
35 4,460,076
56 R 4,460,077
4,460,078
85 A 4,460,079

CLASS 194

1 G B1 4,375,255
100 A 4,460,080

CLASS 198

341 4,460,081
382 4,460,082
486 4,460,083

CLASS 200

5 A 4,460,810
51.03 4,460,811
83 J 4,460,812
146 R 4,460,813

CLASS 202

262 4,460,437

CLASS 204

51 4,460,438
56 R 4,460,439
67 4,460,440
73 A 4,460,441
114 4,460,442
129 4,460,443
4,460,444
159.17 4,460,446
159.2 4,460,445
213 4,460,447
266 4,460,448
281 4,460,449
290 F 4,460,450
415 4,460,451

CLASS 206

158 4,460,084
349 4,460,085
389 4,460,086
415 4,460,087
494 4,460,088
527 4,460,089
540 4,460,090
621 4,460,091

CLASS 208

11 LE 4,460,452
33 4,460,453
40 4,460,454
4,460,455
89 4,460,456
139 4,460,457
252 4,460,458

CLASS 209

9 4,460,459
166 4,460,460

CLASS 210

104 4,460,461
163 4,460,462
222 4,460,463
223 4,460,464
266 4,460,465
274 4,460,466
276 4,460,467
445 4,460,468
447 4,460,469
605 4,460,470
629 4,460,471
639 4,460,472
640 4,460,473
674 4,460,475
679 4,460,474
689 4,460,476
701 4,460,477

CLASS 211

4 4,460,092
4,460,093
35 4,460,094
69.1 4,460,095
184 4,460,096
189 4,460,097

CLASS 212

187 4,460,098

CLASS 213

159 4,460,099

CLASS 215

237 4,460,100
307 4,460,101

CLASS 219

10.55 F 4,460,814
69 M 4,460,815
69 W 4,460,816
85 D 4,460,817
200 4,460,818
302 4,460,819
385 4,460,820
388 4,460,821
401 4,460,822

CLASS 220

85 B 4,460,102
254 4,460,103
304 4,460,104
335 4,460,105

CLASS 221

1 4,460,106
67 4,460,107
94 4,460,108

CLASS 222

4,460,109
504 4,460,110

CLASS 223

43 4,460,111
88 4,460,112
101 4,460,113

CLASS 224

32 R 4,460,114
4,460,115
222 4,461,030
321 4,460,116
324 4,460,117

CLASS 228

146 4,460,118

CLASS 229

68 R 4,460,119

CLASS 235

105 4,460,823
375 4,460,824
472 4,460,120
488 4,460,825

CLASS 236

1 G 4,460,121
44 A 4,460,122
46 R 4,460,123
48 R 4,460,124
94 4,460,125

CLASS 239

112 4,460,126
126 4,460,127
533.1 4,460,128
542 4,460,129
559 4,460,130

CLASS 241

19 4,460,131
46.11 4,460,132
74 Re.31,631

CLASS 242

18 A 4,460,133
68.4 4,460,134
4,460,135
202 4,460,136

CLASS 244

3.27 4,460,137
215 4,460,138

CLASS 248

68.1 4,460,139
75 4,460,140
222.1 4,460,141
231 4,460,142
359 4,460,143
397 4,460,144
447 4,460,145
456 4,460,146
542 4,460,147
585 4,460,148

CLASS 250

227 4,460,826
310 4,460,827
329 4,460,828
342 4,460,829
370 4,460,830
492.2 Re.31,630
4,460,831
505.1 4,460,832
519.1 4,460,833

CLASS 251

1 B 4,460,149
4,460,150
4,460,151
26 4,460,152
99 4,460,153
130 4,460,154
144 4,460,155
149.3 4,460,156
315 4,460,157

CLASS 252

8.05 4,460,480
8.55 D 4,460,484
8.55 E 4,460,482
8.55 R 4,460,483
8.75 4,460,485
8.8 4,460,487
8.9 4,460,486
75 4,460,478
79.4 4,460,479
89.1 4,460,488
90 4,460,489
92 4,460,490
135 4,460,491
299.6 4,460,492
321 4,460,493
512 4,460,494
518 4,460,495
4,460,496
4,460,497
522 R 4,460,498
628 4,460,499
4,460,500

CLASS 253

8.55 D 4,460,481

CLASS 254

124 4,460,158
134.3 R 4,460,159
386 4,460,160

CLASS 256

13.1 4,460,161

CLASS 260

112 R 4,460,501
112.5 R 4,460,502
4,460,503
123.5 4,460,504
153 4,460,505
239 E 4,460,506
239.5 4,460,509
245.2 T 4,460,507
245.6 4,460,508
410.9 R 4,460,510
446 4,460,511
458 F 4,460,512
466 4,460,513
544 F 4,460,514
665 R 4,460,515

CLASS 261

1 4,460,516
23 R 4,460,517
39 A 4,460,518
76 4,460,519
106 4,460,520
111 4,460,521

CLASS 264

0.5 4,460,522
1.9 4,460,523
26 4,460,524
39 4,460,525
41 4,460,526
56 4,460,527
65 4,460,528
81 4,460,529
121 4,460,530
138 4,460,531
163 4,460,532
236 4,460,533
246 4,460,534
262 4,460,535
272.17 4,460,537

CLASS 266

56 4,460,162
95 4,460,163
158 4,460,164
4,460,165
228 4,460,166

CLASS 267

42 4,460,167
140.1 4,460,168

CLASS 271

192 4,460,169

CLASS 272

65 4,460,170
94 4,460,171

CLASS 273

29 A 4,460,172
55 B 4,460,173
84 R 4,460,174
127 C 4,460,176
127 R 4,460,175
176 FA 4,460,177
326 4,460,178
402 4,460,179

CLASS 277

3 4,460,180
12 4,460,181
4,460,182
4,460,183
35 4,460,184
53 4,460,185

CLASS 280

11.1 BT 4,460,187
30 4,460,188
47.27 4,460,189
92 4,460,186
247 4,460,190
287 4,460,191
4,460,192
4,460,193
415 R 4,460,194
443 4,460,195
612 4,460,196
676 4,460,197
771 4,460,198
804

CLASS 285

18 4,460,200
4,460,201
333 4,460,202

CLASS 292

318 4,460,203
356 4,460,204

CLASS 293

120 4,460,205
132 4,460,206

CLASS 294

65 4,460,208
67 BC 4,460,209
97 4,460,210
99 R 4,460,211
115 4,460,212
147 4,460,207

CLASS 296

1 S 4,460,213
33 4,460,214

CLASS 297

14 4,460,215
217 4,460,216
361 4,460,217

CLASS 299

1 4,460,218

CLASS 301

108 R 4,460,219

CLASS 303

119 4,460,220

CLASS 307

64 4,460,834
296 R 4,460,835
311 4,460,836
355 4,460,837

CLASS 310

76 4,460,838
154 4,460,839
313 R 4,460,995
328 4,460,840
334 4,460,841
338 4,460,842

CLASS 312

277 4,460,221
286 4,460,222

CLASS 313

406 4,460,843
412 4,460,844
417 4,460,845

CLASS 315

5.38 4,460,846
58 4,460,847
101 4,460,848
209 R 4,460,849
367 4,460,850
408 4,460,851

CLASS 318

67 4,460,852
86 4,460,853
114 4,460,854
135 4,460,855
254 4,460,856
375 4,460,857
585 4,460,858
696 4,460,859
721 4,460,860
722 4,460,861
741 4,460,862

CLASS 320

59 4,460,863

CLASS 323

313 4,460,864
4,460,865

CLASS 324

57 PS 4,460,866
117 H 4,460,867
158 F 4,460,868
200 4,460,869
429 4,460,870

CLASS 328

169 4,460,871

CLASS 330

252 4,460,872
259 4,460,873
261 4,460,874
286 4,460,875
296 4,460,876

CLASS 333

26 4,460,877
174 4,460,879
207 4,460,878
238 4,460,880

CLASS 335

128 4,460,881
225 4,460,882

CLASS 336

65 4,460,883
73 4,460,884
180 4,460,885

CLASS 337

148 4,460,886
186 4,460,887
290 4,460,888

CLASS 339

14 R 4,460,223
17 F 4,460,224
28 4,460,225
55 4,460,226
94 M 4,460,227
99 R 4,460,228
4,460,229
106 4,460,230
113 R 4,460,231
122 R 4,460,232
4,460,233
128 4,460,234
154 R 4,460,235
176 M 4,460,236
176 MP 4,460,237
224 B1 4,049,335
255 R 4,460,238
258 F 4,460,239

CLASS 340

61 4,460,889
347 AD 4,460,891
347 DD 4,460,890
555 4,460,892
682 4,460,893

CLASS 343

700 MS 4,460,894
713 4,460,895
750 4,460,896
754 4,460,897
777 4,460,898
841 4,460,899
872 4,460,901
880 4,460,900

CLASS 346

7 4,460,902
75 4,460,903
140 R 4,460,905
4,460,906
153.1 4,460,907
155 4,460,908
160 4,460,909
207 4,460,199

CLASS 350

6.8 4,460,240
96.20 4,460,241
4,460,242
96.21 4,460,243
112 4,460,244
253 4,460,245
305 4,460,246
331 T 4,460,247
335 4,460,248
356 4,460,249
358 4,460,250
427 4,460,251
486 4,460,252

CLASS 384

86 4,460,254
4,460,255
173.11 4,460,256
402 4,460,257
4,460,258
403 4,460,259
406 4,460,260
408 4,460,261
414 4,460,262
415 4,460,263
419 4,460,264
446 4,460,253
448 4,460,265

CLASS 355

3 DD 4,460,266
4,460,267
8 4,460,268
14 E 4,460,270
14 SH 4,460,269
74 4,460,271
91 4,460,272

CLASS 356

237 4,460,273
318 4,460,274
358 4,460,275

CLASS 357

22 4,460,910
23.6 4,460,911
24 4,460,912
34 4,460,913
51 4,460,914
74 4,460,915
80 4,460,916
81 4,460,917

CLASS 358

21 R 4,460,918
44 4,460,919
100 4,460,920
107 4,460,921
122 4,460,922
136 4,460,923
310 4,460,924
312 4,460,925
325 4,460,926
342 4,460,927

CLASS 360

4 4,460,928
12.3 4,460,934
30 4,460,929
60 4,460,930
71 4,460,931
105 4,460,932
106 4,460,933

CLASS 361

91 4,460,935
305 4,460,936
333 4,460,937
411 4,460,938

CLASS 362

31 4,460,939
32 4,460,940
158 4,460,941
217 4,460,942
276 4,460,943
4,460,944
294 4,460,945
319 4,460,946
374 4,460,947
396 4,460,948

CLASS 363

28 4,460,949
44 4,460,950
49 4,460,951
61 4,460,952
62 4,460,953
75 4,460,954
91 4,460,955
141 4,460,956

CLASS 364

75 4,460,904
200 4,460,957
4,460,958
4,460,959
4,460,960
414 4,460,961
426 4,460,962
4,460,963
434 4,460,964
464 4,460,965
468 4,460,966
497 4,460,967
519 4,460,968
727 4,460,969
761 4,460,970
900 4,460,971
4,460,972
4,460,973
4,460,974
4,460,975

CLASS 365

8 4,460,976
106 4,460,977
154 4,460,978
182 4,460,979
184 4,460,980
189 4,460,981
4,460,982
4,460,983
190 4,460,984
207 4,460,985

CLASS 366

13 4,460,276
76 4,460,277
149 4,460,278
247 4,460,279

CLASS 367

27 4,460,986
103 4,460,987

CLASS 368

74 4,460,280
88 4,460,281
157 4,460,282

CLASS 369

32 4,460,988
45 4,460,989
112 4,460,990
230 4,460,991

CLASS 370

19 4,460,992
84 4,460,993
88 4,460,994

CLASS 371

6 4,460,996
10 4,460,997
4,460,998
21 4,460,999
4,461,000
38 4,461,001
47 4,461,002
66 4,461,003

CLASS 372

2 4,461,004
10 4,461,005
35 4,461,006
45 4,461,007
4,461,008
108 4,461,009

CLASS 373

4,461,010

CLASS 375

18 4,461,011
62 4,461,012
65 4,461,013
83 4,461,014

CLASS 376

267 4,460,538
268 4,460,536
285 4,460,539
327 4,460,540

CLASS 377

24 4,461,015

CLASS 378

23 4,461,016
84 4,461,018
044 4,461,017
125 4,461,019
143 4,461,020

CLASS 381

2 4,461,021
29 4,461,022
43 4,461,023
46 4,461,024
56 4,461,025
98 4,461,026

CLASS 382

9 4,461,027
15 4,461,028
25 4,461,029

CLASS 383

123 4,461,031

CLASS 384

119 4,460,283
126 4,460,284
152 4,460,285

CLASS 400

118 4,460,286
213.1 4,460,287

CLASS 403

27 4,460,288
314 4,460,289
373 4,460,290

CLASS 404

35 4,460,291
41 B1 4,128,357

CLASS 405

129 4,460,292
133 4,460,293
290 4,460,294
303 4,460,295

CLASS 408

124 4,460,296

CLASS 409

293 4,460,297

CLASS 411

15 4,460,298
85 4,460,299
375 4,460,300
449 4,460,301

CLASS 414

5 4,460,302
22 4,460,303
33 4,460,304
108 4,460,305
427 4,460,306
525 R 4,460,307
786 4,460,308

CLASS 415

1 4,460,309
26 4,460,310
116 4,460,311
178 4,460,313
207 4,460,312

CLASS 416

145 4,460,314
216 4,460,315
217 4,460,316

CLASS 417

49 4,460,317
54 4,460,318
204 4,460,319
240 4,460,320

CLASS 418

55 4,460,321
201 4,460,322

CLASS 419

42 4,460,541

CLASS 420

443 4,460,542
513 4,460,543

CLASS 422

59 4,460,544
131 4,460,545
245 4,460,546

CLASS 423

7 4,460,547
10 4,460,548
4,460,549
79 4,460,550
166 4,460,551
210 4,460,552
219 4,460,553
223 4,460,554
309 4,460,555
350 4,460,556
447.1 4,460,557
450 4,460,558

CLASS 424

1.1 4,460,559
4,460,560
4,460,561
28 4,460,562
35 4,460,563
52 4,460,564
4,460,565
70 4,460,566
4,460,567
4,460,568
4,460,569
4,460,570
71 4,460,571
78 4,460,572
80 4,460,573
85 4,460,574
92 4,460,575
177 4,460,576
180 4,460,577
195 4,460,578
200 4,460,579
232 4,460,580
244 4,460,581
246 4,460,582
4,460,583
248.5 4,460,607
249 4,460,584
4,460,585
250 4,460,586
4,460,587
251 4,460,588
4,460,589
4,460,590
4,460,591
256 4,460,592
258 4,460,593
266 B1 4,264,611
267 4,460,594
269 4,460,595
272 4,460,596
273 P 4,460,597
273 R 4,460,598
274 4,460,599
4,460,600
300 4,460,601
322 4,460,602
324 4,460,603
330 4,460,604
4,460,605
341 4,460,606

CLASS 425

77 4,460,323
166 4,460,324
393 4,460,325
411 4,460,326
446 4,460,327

CLASS 426

11 4,460,608
39 4,460,609
102 4,460,610
272 4,460,611
477 4,460,612
580 4,460,616
601 4,460,613
603 4,460,614
609 4,460,617
657 4,460,615

CLASS 427

39 4,460,618
57 4,460,619
58 4,460,620
64 4,460,621
79 4,460,622
101 4,460,623
102 4,460,624
136 4,460,625
150 4,460,626
212 4,460,627
214 4,460,628
221 4,460,629
376.2 4,460,630

CLASS 428

35 4,460,631
4,460,632
110 4,460,633
124 4,460,634
142 4,460,635
199 4,460,665
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428 4,460,654
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675 4,460,659

CLASS 429

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89 4,460,661
104 4,460,662
151 4,460,663
181 4,460,664
236 4,460,666

CLASS 430

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57 4,460,669
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98 4,460,671
110 4,460,672
128 4,460,673
190 4,460,674
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409 4,460,679
434 4,460,680
502 4,460,681
559 4,460,682

CLASS 431

11 4,460,328
20 4,460,329
170 4,460,330

CLASS 432

72 4,460,331
4,460,332
80 4,460,333
223 4,460,334
247 4,460,335

CLASS 433

9 4,460,336
29 4,460,337
60 4,460,338
72 4,460,339
91 4,460,340
122 4,460,341

CLASS 434

185 4,460,342

CLASS 435

10 4,460,683
14 4,460,684
70 4,460,685
137 4,460,686
161 4,460,687
172 4,460,689
172.3 4,460,688
235 4,460,690
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243 4,460,692
317 4,460,693

CLASS 436

531 4,460,694
533 4,460,695

CLASS 441

40 4,460,343
73 4,460,344

CLASS 446

462 4,459,776

CLASS 455

4 4,461,032
78 4,461,033
161 4,461,034
164 4,461,035
165 4,461,036
169 4,461,037
176 4,461,038
326 4,461,039
327 4,461,040
328 4,461,041
333 4,461,042

CLASS 464

69 4,460,345
179 4,460,346

CLASS 474

82 4,460,347

CLASS 493

108 4,460,348
163 4,460,349
412 4,460,350

CLASS 494

16 4,460,351
70 4,460,352

CLASS 501

37 4,460,696
87 4,460,697

CLASS 502

66 4,460,698
84 4,460,699
104 4,460,700
4,460,701
150 4,460,702
155 4,460,703
302 4,460,704
303 4,460,705
304 4,460,706
315 4,460,707
426 4,460,708

CLASS 518

700 4,460,709
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CLASS 521

65 4,460,711
92 4,460,712
122 4,460,713
4,460,714
137 4,460,715

CLASS 523

145 4,460,716
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206 4,460,722
400 4,460,718
508 4,460,719

CLASS 524

5 4,460,720
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70 4,460,723
77 4,460,724
102 4,460,725
114 4,460,726
215 4,460,727
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376 4,460,734
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403 4,460,730
451 4,460,731
460 4,460,732
493 4,460,733
537 4,460,735
539 4,460,736
584 4,460,737
591 4,460,738
702 4,460,739
724 4,460,740

CLASS 525

64 4,460,741
4,460,742
68 4,460,743
71 4,460,744
74 4,460,745
117 4,460,746
197 4,460,747
256 4,460,748
310 4,460,749
333.8 4,460,750
371 4,460,751
462 4,460,752

CLASS 526

62 4,460,753
75 4,460,754
84 4,460,755
106 4,460,756
114 4,460,757
287 4,460,758
298 4,460,759
301 4,460,760

CLASS 528

18 4,460,761
335 4,460,762
336 4,460,763
487 4,460,764

CLASS 536

26 4,460,765
84 4,460,766
124 4,460,767

CLASS 544

197 4,460,769
242 4,460,770
282 4,460,771
311 4,460,772
350 4,460,773
366 4,460,774

CLASS 546

147 4,460,775
250 4,460,776
273 4,460,777
304 4,460,778

CLASS 548

105 4,460,768
201 4,460,780
217 4,460,779
356 4,460,781
547 4,460,782
549 4,460,783

CLASS 549

259 4,460,784

CLASS 560

21 B1 3,941,830
83 4,460,785
126 4,460,786

CLASS 562

599 4,460,787

CLASS 564

412 4,460,788
504 4,460,789
511 4,460,790

CLASS 568

45 4,460,791
341 4,460,792
405 4,460,793
428 4,460,794
446 4,460,795
617 4,460,796
715 4,460,797
723 4,460,798
764 4,460,799
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840 4,460,801

CLASS 604

31 4,460,353
73 4,460,354
118 4,460,355
180 4,460,356
238 4,460,357
250 4,460,358
277 4,460,359
288 4,460,360
319 4,460,361
323 4,460,362
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387 4,460,364
408 4,460,365
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890 4,460,367
896 4,460,368
897 4,460,369
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4,460,372

CLASSIFICATION OF DESIGNS

D1—	311	274,717		73	274,684		435	274,700		207	274,716			274,733		155	274,749
D2—	1	274,669		313	274,685		439	274,701	D13—	24	274,718			274,734		163	274,750
	29	274,670		337	274,686	D10—	8	274,702			274,719		19	274,735	D24—	1.1	274,751
	226	274,671	D8—	7	274,687		15	274,703		32	274,720	D21—	59	274,736		8	274,752
	278	274,672		40	274,688		47	274,704		40	274,721		65	274,737		34	274,753
	378.2	274,673		68	274,689		73	274,705	D14—	5	274,722		114	274,738		56	274,754
D3—	12	274,674		310	274,690		92	274,706		30	274,723		121	274,739	D25—	22	274,755
D6—	310	274,682		336	274,691		104	274,707		53	274,724		137	274,740			274,756
	349	274,676	D9—	309	274,692	D11—	3	274,708		100	274,725		212	274,741		58	274,757
	363	274,677		341	274,693		43	274,709		113	274,726		225	274,742	D26—	39	274,758
	366	274,675		350	274,694		128	274,710			274,727			274,743	D28—	64	274,759
	370	274,678		352	274,695		134	274,711			274,728		239	274,744	D30—	1	274,760
	392	274,679			274,696		135	274,712		114	274,729	D23—	4	274,745	D32—	52	274,761
	428	274,681			274,697	D12—	110	274,713			274,730		21	274,746	D34—	33	274,762
	530	274,680		370	274,698		129	274,714			274,731		51	274,747		43	274,763
D7—	15	274,683			274,699		147	274,715	D17—	14	274,732		151	274,748			

CLASSIFICATION OF PLANTS

P—	8	5,260		10	5,259		70	5,258									

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PATENTS

01 :	4,459,814	4,460,227		4,460,981	4,459,989	4,460,300	4,459,821
	4,460,069	4,460,229		4,460,982	4,460,075	4,460,332	4,460,097
04 :	4,459,709	4,460,230		4,460,997	4,460,232	4,460,362	4,460,395
	4,459,730	4,460,246		4,460,999	4,460,275	4,460,368	4,460,531
	4,459,832	4,460,264		4,461,004	4,460,472	4,460,370	4,460,554
	4,460,320	4,460,271		4,461,007	4,460,514	4,460,449	21 : 4,460,063
	4,460,339	4,460,279		4,461,009	4,460,562	4,460,489	4,460,561
	4,460,537	4,460,293		4,461,011	4,460,610	4,460,571	22 : 4,459,825
	4,460,599	4,460,340		4,461,022	4,460,666	4,460,632	4,460,039
	4,460,864	4,460,349		4,461,039	4,460,694	4,460,745	4,460,448
	4,460,865	4,460,353		4,038,498	4,460,828	4,460,806	4,460,703
	4,460,917	4,460,355		4,375,255	4,460,968	4,460,807	4,460,729
	4,460,964	4,460,358	08 :	4,459,914	4,461,000	4,460,818	24 : 4,459,717
	4,461,036	4,460,372		4,460,106	13 : 4,459,721	4,460,822	4,459,746
05 :	4,459,777	4,460,399		4,460,276	4,459,747	4,460,838	4,459,858
	4,460,167	4,460,405		4,460,459	4,460,140	4,460,863	4,459,868
	4,460,173	4,460,416		4,460,530	4,460,430	4,460,886	4,459,912
06 :	4,459,703	4,460,433		4,460,534	17 : 4,459,772	4,460,887	4,460,002
	4,459,711	4,460,436		4,460,909	4,459,776	4,460,903	4,460,162
	4,459,713	4,460,441		4,460,974	4,459,785	4,460,918	4,460,178
	4,459,731	4,460,443	09 :	4,459,726	4,459,793	4,460,922	4,460,357
	4,459,760	4,460,457		4,459,754	4,459,797	4,460,970	4,460,559
	4,459,789	4,460,462		4,459,794	4,459,798	4,460,994	4,460,720
	4,459,813	4,460,473		4,459,845	4,459,824	4,460,995	4,460,747
	4,459,844	4,460,487		4,459,881	4,459,843	4,461,026	25 : 4,459,829
	4,459,859	4,460,521		4,459,887	4,459,867	4,461,031	4,459,888
	4,459,883	4,460,546		4,459,922	4,459,873	4,461,032	4,459,975
	4,459,895	4,460,560		4,460,065	4,459,876	4,461,040	4,459,996
	4,459,906	4,460,573		4,460,188	4,459,880	4,461,041	4,460,124
	4,459,910	4,460,591		4,460,233	4,459,894	4,049,335	4,460,297
	4,459,915	4,460,603		4,460,243	4,459,913	18 : 4,459,707	4,460,317
	4,459,923	4,460,620		4,460,309	4,459,920	4,459,846	4,460,371
	4,459,934	4,460,662		4,460,738	4,459,954	4,459,950	4,460,501
	4,459,935	4,460,707		4,460,829	4,459,978	4,460,154	4,460,731
	4,459,937	4,460,735		4,460,832	4,459,980	4,460,284	4,460,741
	4,459,971	4,460,736		4,460,993	4,460,006	4,460,328	4,460,810
	4,459,972	4,460,821		3,752,159	4,460,030	4,460,468	4,460,831
	4,459,974	4,460,871	10 :	4,460,011	4,460,032	4,460,542	4,460,846
	4,459,982	4,460,874		4,460,401	4,460,068	4,460,656	4,460,891
	4,459,987	4,460,877		4,460,404	4,460,073	4,460,684	4,460,942
	4,459,993	4,460,889		4,460,427	4,460,094	4,460,698	4,460,951
	4,459,995	4,460,890		4,460,655	4,460,099	4,460,868	4,460,959
	4,460,019	4,460,894		4,460,679	4,460,100	4,460,885	4,461,006
	4,460,025	4,460,895		4,460,695	4,460,126	4,460,902	4,461,025
	4,460,044	4,460,896	11 :	4,460,892	4,460,165	4,460,948	26 : 4,459,735
	4,460,045	4,460,898	12 :	4,459,734	4,460,175	19 : 4,459,704	4,459,862
	4,460,092	4,460,901		4,459,745	4,460,176	4,459,900	4,459,872
	4,460,105	4,460,944		4,459,748	4,460,186	4,460,098	4,459,968
	4,460,129	4,460,945		4,459,764	4,460,214	4,460,168	4,459,969
	4,460,153	4,460,960		4,459,784	4,460,223	4,460,170	4,459,992
	4,460,221	4,460,967		4,459,791	4,460,237	4,460,244	4,460,015
	4,460,225	4,460,972		4,459,803	4,460,285	4,460,814	4,460,029
	4,460,226	4,460,979		4,459,908	4,460,298	20 : 4,459,786	4,460,115

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4,460,121
4,460,125
4,460,205
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4,460,479
4,460,643
4,460,681
4,460,947
56 : 4,460,218

DESIGN PATENTS

01 : 274,746
04 : 274,703
05 : 274,684
06 : 274,670
274,678
274,680
274,688
274,691
274,692
274,700
274,729
274,730

274,738
274,744
274,761
09 : 274,675
12 : 274,734
274,750
274,757
274,762
13 : 274,672
274,694
16 : 274,760
17 : 274,669

274,690
274,717
274,751
18 : 274,763
20 : 274,689
21 : 274,674
274,747
274,759
25 : 274,677
28 : 274,706
34 : 274,710
274,711

274,712
274,724
274,731
274,741
274,745
274,752
36 : 274,671
274,681
274,683
274,702
274,721
274,737

274,739
274,740
274,754
37 : 274,732
274,733
274,753
39 : 274,714
274,715
274,755
274,756
40 : 274,698
274,699

41 : 274,687
274,749
42 : 274,682
274,697
274,719
44 : 274,695
48 : 274,673
274,704
274,735
274,696
51 : 274,679
53 : 274,701

PLANT PATENTS

06 : 5,258

5,259

5,260

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